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ABSTRACT

To identify the characteristics of students in the technical agriculture programs in Ohio and to determine the association between selected student characteristics, their success in the program, and their success in the world of work, this research report was conducted by staff members of The Ohio State University Agricultural Education Department. The population of this study included all students and dropouts in 11 agricultural technology programs. Major findings are: (1) Technical education in agriculture has grown at a rate of one new program, 33 additional students, and 11 more graduates per year on the average, (2) Age of enrollees averaged 18.8 years in 1968--down from 20.1 over the past 5 years, (3) Upon graduation most students took training-related jobs and stuck to them, (4) Salaries of graduates rose substanially from previous years, (5) Employers reporting on job skills indicated that graduates were adequately prepared for the duties on the job, and (6) The programs were consistent in providing adequate development of important general abilities. Data collection instruments and tables are appended. (GB)

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RESEARCH SERIES IN AGRICULTURAL EDUCATION

A Research Report of a Graduate Study

This study was supported by the Ohio Agricultural Research and Development Center in Cooperation with the North Central Agricultural Experiment Station Committee (NC 86)

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A Research Report

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STUDENT AND PROGRAM CHARACTERISTICS OF TECHNICAL AGRICULTURE PROGRAMS IN OHIO

by

Maynard J. Iverson,
Vincent J. Feck and Ralph E. Bender

This study was supported by the Ohio Agricultural Research and Development Center in Cooperation with the North Central Agricultural Experiment Station Committee (NC 86).

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The Department of Agricultural Education
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FOREWORD

Since 1963 post-high school programs in agriculture have been offered in Ohio to prepare youth to enter the world of work as agricultural technicians. These programs, which provide a new level of occupational and educational choice for high school graduates, have been well received. During the current year we have 11 programs with 364 students enrolled. Plans are underway for the development of a number of additional programs.

In order that the technician programs be most appropriate in meeting the interests and needs of the employers as well as the students, it is desirable that we learn as much as possible concerning the nature of the students served, the factors and forces that cause them to enroll and complete such programs, and the effectiveness of each program. Such a study was completed by Dr. William J. Becker in 1968. The study herein reported is a continuation of that effort by Vincent Feck and Maynard Iverson. Feck assumed primary responsibility for revising the Becker questionnaire and securing the data. Iverson programed for data processing and summarized and prepared the written report.

The Ohio Agricultural Research and Development Center at Wooster in cooperation with the North Central Region Agricultural Experiment Station Committee supported this study as a part of NC-86. The title of the North Central project is "The Anatomy of Decision Making As It Relates to Occupational and Educational Choices of Rural Youth."

Ralph E. Bender

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AGRICULTURAL TECHNOLOGIES IN OHIO, 1968-69

KEY

1. Clark County Technical Institute
   Agri-Business
   Agri-Equipment
2. Cleveland Technical School
   Horticulture
3. Columbus Technical Institute
   Food Processing
4. Penta County Technical Institute
   Agri-Business
5. Tri-County Technical Institute
   Forestry
   Recreation & Wildlife

STUDENT AND PROGRAM CHARACTERISTICS OF TECHNICAL AGRICULTURE PROGRAMS IN OHIO

The education of agricultural technicians in Ohio has grown steadily since its inception in 1963 when 17 students enrolled in the first program. During the 1969-70 school year, eight institutions offered 11 programs enrolling a total of 364 students. This expansion in technical programs in agriculture has produced a need for more information about students and programs. In order to provide a sound basis for planning and subsequent improvement and expansion of technical agriculture programs to better meet the needs of Ohio's youth and of the Ohio agricultural industry, questions need to be answered regarding why students enroll and finish technical programs, why some drop out, and what factors contribute to the success of the individuals in technical school and on the job.

The first attempt to secure needed answers to these questions was made in a 1968 Ph. D. dissertation by Becker[1], who investigated the first five years of technical agriculture programs in Ohio. A research report by Becker and Bender[2] published in September of 1968 presented the major findings. (Hereafter, reference made to this study will be in the form of "the Becker study", or simply "Becker".)

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[1]Becker, William J. "Technical Agriculture Programs in Ohio with Emphasis Upon Student and Program Characteristics." Unpublished Ph. D. dissertation, The Ohio State University, 1968.

[2]Becker, William J., and Bender, Ralph E. Technical Agriculture Programs in Ohio with Emphasis Upon Student and Program Characteristics. Columbus, Ohio: The Ohio State University, September, 1968.

As a continuing follow-up of the basic concerns of Becker's investigation, the writers conducted a study of technical agriculture programs in Ohio for the school year 1968-69.

Purpose

The primary purpose of this study was to identify the characteristics of students in the technical agriculture programs in Ohio and to determine the association between selected student characteristics, their success in the program and their later success in the world of work.

Objectives

The specific objectives of this study were to:

1. Determine the enrollments and the drawing and the holding power of post-high school agricultural technician training programs.

2. Identify the characteristics of students enrolled in post-high school agricultural technician training programs.

3. Determine the association between selected characteristics of students and their success as students and as agricultural technicians.

4. Determine the factors and forces which influenced students to enroll in and complete agricultural technician training programs.

5. Determine the satisfaction of students, dropouts, and graduates with their agricultural technician training program.

6. Determine how adequately the technician training programs in agriculture prepared graduates to achieve the level of performance expected by their employers.

Scope

The population of this study included all students and dropouts in the seven agricultural technology programs conducted at five schools in Ohio during the 1968-69 school year, plus the 1968 spring graduates of four programs and their employers.

Method of Investigation

This study was a continuation of the evaluation of post-high school agricultural technician training programs in Ohio completed in 1968 under the direction of Becker and Bender. Basic data-gathering survey forms[3] used in that study were modified and continued in use for the 1968-69 investigation.

Data were secured from the following technical institutes and technical programs: Clark County Technical Institute, Springfield, (Agri-Business and Agri-Equipment); Cleveland Technical Institute, Cleveland, (Horticulture); Columbus Technical Institute, Columbus, (Food Processing); Penta Technical College, Perrysberg, (Agri-Business); and Tri-County Technical Institute, Nelsonville, (Recreation and Wildlife, and Forestry). Penta and Tri-County Institutes offered agriculture for the first time in 1968, and thus provided only limited data.

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[3] See Appendix A.

Surveys conducted

Enrollee questionnaire

A questionnaire was administered to 130 1968-69 first-year students in all programs. This instrument was designed to secure personal and situational characteristics of the enrollees such as father's occupation, number of brothers and sisters, distance to school, jobs during high school, and influences to continue one's education and enroll in the particular technology. Seventy-one per cent of the 183 initial enrollees completed the survey. Dropouts, transfers and absenteeism accounted for the reduced number.

Student Survey

A revised questionnaire was administered to 54 second-year 1968-69 students during their last quarter prior to graduation. The first part of the survey sought to determine employment while attending technical school, influences which caused the student to complete the course, jobs selected, value of high school and technical courses, and whether the student recommended the program to others. The second part of the survey was used to secure the student's rating of his own general and specific technological abilities and understandings.

Graduate survey

A questionnaire was sent to the 55 graduates in 1968 of the Agri-Business, Agri-Equipment, Horticulture, and Food Processing technology

programs. This instrument was designed to determine their current employment status, their job and salary expectations, the value of their technical school training in their current employment and the rating of their technical understandings and abilities. Nearly half replied of which 24 or about 44 per cent were useable, as indicated in Table 1.[4]

Employer survey

A questionnaire was sent to the 30 employers of the 1968 graduates of Agri-Business, Agri-Equipment, Horticulture, and Food Processing technology programs. This instrument was designed to find out the job status of the technician employed, and a rating of their general agricultural understandings and abilities, personality traits, and technical understandings and abilities. Three-fourths of the employers responded of which 19 or 63 per cent were fully useable. Employer responses are listed in Table 2.

Survey of dropouts

Out of the 58 total dropouts, a questionnaire was sent to the 20 dropouts for whom addresses were available to determine their current job status and salary, value of technical school courses completed, and reason for not completing the technical school program. Only one incomplete response was received, which resulted in no data for this segment of the study.

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[4] Tables appear in numerical order in Appendix B.

Use of school records

Data were collected from the cumulative records of those students who enrolled in agricultural technician training programs in Ohio during 1968-69. The high school transcripts provided information on grade point average, and credits for Science, Math, English, Vo-Ag and all courses, class rank and intelligence quotient. From the technical institution transcript, information on grades and grade point average was obtained for 1968 graduates. High school transcripts were not available for eight Horticulture enrollees.

Processing

Data collected were programmed by the investigator for electronic tabulation and processing at the Computer Center, Ohio Agricultural Research and Development Center, Wooster. The collated data were then put in table form and summarized.

Major Findings of the Study

The major findings derived from analysis of the data collected through this study are listed below.

Ohio technical agriculture programs and participants

Initial enrollment

In 1968, seven programs admitted 183 new enrollees bringing Ohio's total initial enrollment since 1963 to 470. This was about double the

previous year's enrollment, due largely to the addition of three new programs--Agri-Business at Penta and Recreation and Wildlife, and Forestry at Tri-County. An average increase of one new program and 33 students per year has been experienced, even though average enrollment per program has remained in the twenties. A summary of enrollments by technology and year is found in Table 3.

Graduates

In 1968 and 1969, fifty-five and 57 students, respectively, graduated from four technical agriculture programs. This brought to 194 the total technical agriculture graduates in Ohio, an average increase of eleven graduates per year. Clark County Technical Institute leads the other institutions in number of graduates with 94 Agri-Business and 53 Agri-Equipment graduates. Thirty-three have graduated from Food Processing Technology and 18 from Horticulture. A projection to 1970 based on beginning second-year enrollment indicates 140 graduates, or nearly triple the number now graduating each year. Graduate data are indicated in Table 4.

Program status--1968-69

In the school year 1968-69, first and second-year student enrollment totaled 248 including 57 graduates; 135 were still enrolled by the fall quarter of 1969 leaving 58 dropouts from the seven technical agriculture programs. The newest programs--Recreation and Wildlife, and Forestry--had the highest dropout rate--28 and 38 per cent, respectively--

while Agri-Business at Clark County, Food Processing and Horticulture programs substantially reduced their dropout rates to well below 20 per cent. The overall dropout rate was 23.4 per cent, a reduction from the 24.7 per cent, (five year average) reported by Becker. Table 5 reveals this data.

Characteristics of enrollees

Age

The average age of students when they enrolled in Ohio's technical agriculture programs in 1968 was 18.8 years with a range from 17 to 32. Students in the Agri-Business program at Clark County and the enrollees in Recreation and Wildlife, and Forestry averaged slightly older than those in the other programs. However, it appeared that most students entered the programs directly after graduation from high school. The greatest difference between these figures and Becker's study was in the Horticulture program. In 1968 the average age was 18.2 while Horticulture students over the prior four years average 30.5 years of age. This indicated a movement away from adults entering technical agriculture programs. Enrollee age data are presented in Table 6.

Siblings

Enrollees in the seven programs came from families of somewhat similar size with an average of 3.74 children per family. This was up from the 3.57 reported by Becker. Larger families were characteristic of enrollees in Agri-Business, Recreation and Wildlife, and Forestry programs as indicated in Table 7.

Distance of enrollees residences from technical institute

Like the students who preceded them, more than one-half of all 1968 enrollees surveyed lived within 50 miles of the technical school they attended. This was true in all programs except Agri-Equipment in which 85 per cent of the enrollees lived farther away. Another similarity to Becker's study group was that 20 per cent of all enrollees came from a distance in excess of 100 miles. Table 8 shows distances enrollees lived from their technical programs.

Commuting students

Fifty per cent of the enrollees in Ohio technical agriculture programs commuted daily between home and school. This coincided with the number living within 50 miles and was only slightly over the 48 per cent found to be commuting in the five year study. Students in Agri-Equipment and Horticulture reported a smaller number commuting than in the past, while the other programs experienced substantial increases in numbers of commuting students. Table 9 reports the number and per cent of commuting students in each of the technical agriculture programs.

Residence of enrollees

There was considerable variation in residences of enrollees during their high school years. Over 85 per cent of students in the Agri-Business and Agri-Equipment programs reported farm residences while all the enrollees in Food Processing and 75 per cent of the enrollees in Horticulture were from urban homes. No definite pattern was set for enrollees in Forestry.

or Recreation and Wildlife. Sixty-three per cent of all new technical agriculture students in Ohio in 1968 were from farms, 13 per cent were from rural non-farm homes and 24 per cent were from urban residences. This nearly matched the five-year findings by Becker, with the major difference being an increase in 4 per cent of students from rural non-farm residences. Residential details can be seen in Table 10.

Father's occupation

One-half of the fathers of enrollees were employed in non-agriculture occupations, 37 per cent were farmers, seven per cent were retired and about five per cent were in Agri-Business occupations. A high percentage of the fathers of Agri-Business and Agri-Equipment enrollees were farmers while the opposite was true of fathers of enrollees in Food Processing, Horticulture, Recreation and Wildlife, and Forestry. This represented a reversal of the situation found by Becker wherein 50 per cent of the fathers were farmers and 36 per cent were employed in non-agricultural occupations. Table 11 records details concerning numbers of fathers employed in the various occupations.

Employment during high school

Most technical agriculture enrollees in 1968 worked during their high school years--only 10.7 per cent said they had not been employed. Nearly 55 per cent worked on their home farm, 17.7 per cent worked on a different farm and 23.9 per cent worked in a non-agricultural business. The row totals in Table 12 do not equal the number reporting because several

students worked in more than one occupational category. Most Agri-Business and Agri-Equipment students worked on farms or in agri-business, two out of three Food Processing students worked in a non-agricultural business while students in remaining programs were split somewhat evenly between farm or agri-business work and non-agri-business employment. These results agreed basically with Becker's findings with only minor discrepancies. Students reporting no employment were three per cent fewer in the past, fewer 1968 enrollees worked on other farms and slightly more enrollees had been employed in non-agribusiness in 1968.

Employment between high school and technical school

The 130 enrollees in the 1968-69 programs reported that 21 or 16.1 per cent had not worked from the time they graduated from high school to the time of their enrollment in technical school. This was an increase from the 13.8 per cent reported by Becker. Sixty per cent of the 1968 enrollees reported working full time. The Food Processing and the Recreation and Wildlife programs were the only ones which had a majority of enrollees who reported working less than full time before enrolling in technical school. Information on these individuals is tabulated in Table 13. Of those working part or full time, only 22 per cent worked on a farm. Sixty per cent reported working in a non-agricultural business. Only the Horticulture and Food Processing program enrollees worked primarily in an agricultural business. This varied from the

Becker report of more employment in farming or in an agricultural business during the period between high school graduation and technical school enrollment. Employment in the different types of occupations is outlined in Table 14.

Desired work conditions

Technical agriculture enrollees generally favored out-of-doors work and management and supervisory jobs. They did not like promotional, sales or office work. These findings were consistent with student reactions in Becker's five-year study. Table 15 provides some insight into the aspirations of enrollees in the various technical agricultural programs. Some enrollees indicated preferences which were inconsistant with the type of work they would be doing upon graduation, i.e., the low rating given sales work by the Agri-Business enrollees. This may indicate incorrect knowledge of the job on the part of enrollees and may mean more career counseling is needed in recruitment and during the technical program.

High school credits, average, rank and I.Q.

Enrollees in technical agriculture programs accumulated a 2.36 grade point average in high school, ranked at the 54th percentile in their classes, had a 103 intelligence quotient, had three and one-half credits each of English and Vocational Agriculture and two credits each in science and mathematics and had a "B" average in Vocational Agriculture and a "C" average in the others. Only 56 per cent of the 1968 enrollees had vocational agriculture in high school, down from the 66 per cent reported by

Becker. The lowest grades were received in English by enrollees in all programs except Food Processing and Forestry whose lowest grades were in mathematics. Although largely like their predecessors, 1968 enrollees had an average of one-half more credit in vocational agriculture plus a higher grade point average and class rank than students in the past. This may be due to the exclusion of the Horticulture enrollees or because of missing information from some transcripts in the 1968 group. Details by program are shown in Tables 16 and 17.

Factors influencing continued education

As in the past, 1968 enrollees in technical agriculture programs in Ohio put the desire for increased earning ability at the top of the list of reasons for getting more education. As seen in Table 18, all other factors received a mean score below the midpoint on the nine-point scale, considering enrollees of all programs combined. Food Processing enrollees also listed social prestige, desire of parents and other relatives as important. Military deferment and desire of an employer had little influence on the individual continuing his education.

Influences on students to enroll in technical programs

Parents and "others" were the persons who generally exerted the most, albeit moderate, influence on students to enroll in a particular technical program. Vocational agriculture teachers only had influence on enrollees in the Agri-Business program at Penta Technical College.

Technical school representatives exerted little influence. It is evident from Table 19 that no one person or group had major influence on 1968 enrollees in technical agriculture programs--a result consistent with Becker's findings.

Location of the school and low school tuition were the major factors causing enrollees in all programs to opt for technical agriculture. There was little agreement between programs, however, as seen in Table 20. Ability to work while attending school was most important to Agri-Business and Horticulture enrollees, the open house at the technical school was considered a major factor by Agri-Equipment enrollees, and a visit with representatives from the technical school was important in the Food Processing program.

Recommending friends enroll

Enrollees indicated support for technical agriculture programs in their response to the question, "would you recommend that your friends enroll in this technical program,..?" Fifty-one per cent said they definitely would and 44 per cent said yes, with some reservations; only five per cent expressed doubt or said they would not. These figures varied by program as evidenced in Table 21 but generally are consistent with the responses of students in the Becker study.

Characteristics of second-year students

The previous section characterized the 1968 enrollee in technical agriculture programs in Ohio. This part reports on second-year students as of the end of the 1968-69 school year.

Technical program grade point average

Second-year students in technical agriculture programs completed their programs in 1969 with a 2.68 overall average. As in the past, Food Processing students had the highest grade point average and Agri-Equipment the lowest. The Food Processing students' 3.17 average was considerably higher than in the other programs, and was a marked improvement over the 1.88 reported for that program by Becker.

Variables affecting technical school success

Seven factors were correlated with technical school success as measured by grade point average. Table 23 presents the degree of association. High school grade point average (.49), intelligence quotient (.48), class rank (.46) and English grades (.41) had the highest association with technical school grade point average. This compares favorably with Becker's study although he reported higher correlations for science grades, overall grade point average, I. Q., and English but a considerably lower relationship (.37) for high school rank. Similarly, grades in math and vocational agriculture had a low correlation with technical school grades in both studies.

Employment while attending technical school

During the first year of technical school, 16 students reported no employment, 28 were employed part-time and 4 worked full time. Those working reported a mean of 29.6 hours per week for 28 weeks. In the second year fewer (ten) were employed while 32 and seven worked part-time

and full-time, respectively. Second-year students worked one week less and 2.6 fewer hours per week, on the average, than first-year students. No students reporting were unemployed during the intervening summer, and 47 worked full time. Mean hours per week rose to nearly 48 for 25.4 weeks. Becker reported similar findings but with a smaller percentage of unemployed among previous students.

In their first year, more students were employed in non-agricultural occupations than in Agri-Business, farming, or the technology in which they were enrolled. For the ensuing summer and second year, a majority of students were employed in their training-related area or in other agricultural business. Student employment numbers and time spent working by specific program are depicted in Table 24. Table 25 gives types of employment by students in the four technologies.

In regard to the value of employment held by technical students during the summer between their first and second year in the program, students rated work for other than their fathers in an agriculturally-related occupation as the most valuable experience and self employment as least valuable. Responses varied by technology on the value of other experiences. These data are shown in Table 26.

Factors influencing students to complete the program

The 1969 second-year students agreed with students over the past five years in the factors having the most and least influence on them to complete the technical program. The same three factors--concern for desirable employment, opportunity for advancement and higher wages--received

the highest values while inability to find a job, desire to be with friends and desire to avoid military service were rated low as influences. The values given each factor are listed in Table 27.

Influences on selection of a position

Students indicated that advancement, desirable working conditions, rate of pay and opportunities for additional training were major factors in selecting the first position upon completion of the program. The opportunity to live at home, their present employers and technical school teachers had little influence. Mean values by program are presented in Table 28. Becker found similar relative values.

Value of high school courses and activities

Students identified the high school courses they completed and indicated the value of these courses in their technical agriculture program and the estimated value toward their future employment. Table 29 shows that students considered high school course work slightly higher in value on the job than in the technical school program. Vocational Agriculture received the highest mean rating by students in all programs followed in order by mathematics, science and English. English was valued over science by Agri-Business students, math and science were of most value to Food Processing students, and science and English were most vital to Horticulture students. Foreign language and social studies were consistently rated of little value by students in all four programs.

Students generally felt high school activities were of somewhat more value in technical school than to their future employment. Being an officer or member of the Future Farmers of America, a class officer and member of other activities were rated above average in value in both categories. Fine arts activities such as music and debate were considered to be low in value both on the job or in technical school, as indicated in Table 30.

These findings on the value of high school courses and activities on the job and in technical school as perceived by 1969 second-year students just prior to graduation are generally consistent with Becker's results.

Value of phases of the technical program

Students rated six aspects of technical programs for value to their future employment. On-the-job training, classwork in agriculture and contact with other students were rated as most valuable while classwork other than agriculture was only given medium value and counseling by faculty and school activities were considered of lowest value. The introduction in 1968 of on-the-job training as a feature of technical curricula reordered student responses but generally the findings in 1969 agreed with the previous study. Specific ratings by program are listed on Table 31.

Tables 32, 33, 34 and 35 summarize how the students rated each of the courses in their particular technical agriculture program. Although some variations from the expressed values of the past were seen, students generally thought technical agricultural subjects would be of most value

and related courses in communications, human relations, accounting and economics of "average" or lower value in future employment. These differences may have been due to the smaller size of the 1969 student groups.

Student organizations

Only two students were not in favor of having a student organization--96 per cent replied in the affirmative. This was an increase from the 87 per cent reported by Becker. Proposed purposes for technical student organizations were generally rated about equal in importance as seen in Table 36. Horticulture students rated all purposes below "average" except "social and recreation". A major difference from Becker's findings was that social and recreation was rated highest by 1969 second-year students. Previous students had rated this purpose in last place and of little importance.

Basis for selecting students

Asked what factors should be considered when selecting enrollees for technical agriculture programs, students in all programs responded to the effect that prospective students' reasons and desires for attending technical school should be the major factors. Likewise, a personal interview by technical school representatives was considered an important procedure. Recommendations of high school personnel, high school grades, rank and test scores were viewed as poor selection criteria by second-year students in one or more technical program.

These results agreed with Becker's findings in major factors but differed in the order of the criteria judged to be poorer. Table 37 gives a listing of the 1969 second-year student responses.

Characteristics of graduates

In the spring of 1968, 55 individuals graduated from the Agri-Business (Clark County), Agri-Equipment, Food Processing and Horticulture programs. One year later they were surveyed to determine present status. The 24 useable responses are summarized in this section.

Experiences since graduation

Since completion of the technical agriculture program 15 of the 24 graduates reported employment as an agricultural technician for an average period of 11 months. Six of the graduates reported work in other jobs; one was unemployed for a month; two served short terms in the military and two had some further education. Table 38 shows positions and average time they were held by 1968 graduates. Compared to graduates in Becker's study, 13 per cent fewer 1968 graduates were employed as agricultural technicians, somewhat fewer were engaged in other jobs or further education, and a larger proportion of graduates had been in the military or unemployed for short periods. These discrepencies may have been due to the shorter period assessed and/or the smaller percentage of responses in this study. As was indicated earlier, 21 of the 55 graduates were in the military or other overseas service and so were not available for inclusion in the study.

Present status

If the 21 non-respondent graduates known to have been in the military were considered along with the one respondent indicating military service one year after completing the technical program, it can be seen that 40 per cent of the 1968 spring graduates were in the military. Of the remaining respondents, 63 per cent were employed as agricultural technicians, 21 per cent were farming, and three graduates or 16 per cent were engaged in a non-agricultural job. This differed from the 88 per cent of the non-military respondents engaged in work as agricultural technicians as reported in the Becker study. Status of responding graduates by program is listed in Table 39. Table 40 shows that 50 per cent of the 1968 graduates had worked for their present employer prior to graduation. Table 41 points out the fact that 19 out of 24 or 79 per cent of the graduates had held only one job since graduation, while five graduates indicated holding two jobs. No respondent had held more than two jobs. Major reasons given for leaving the first job were to seek more pay or opportunity for advancement, to join the military, and because of being "laid off".

Table 42 indicates that three-fourths of the 17 respondents indicated they were satisfied or very satisfied with their present job; only four graduates indicated they were not satisfied. These statistics imply that there was job stability among technical agriculture graduates, a finding similar to that in Becker's study.

Another measure of program satisfaction is the willingness of graduates to re-enroll if they could go back to the year before they entered. Twenty 1968 graduates, or 83 per cent, would re-enroll again as evidenced in Table 43; Becker found 78 per cent who would re-enroll. All programs had an 80 per cent or greater "yes" responses except Agri-Equipment in which two out of the five responding graduates indicated they would re-enroll.

Salaries of graduates

The starting salaries of graduates in their first position upon completion of their agricultural technician training program was just over $460.00 per month as reported by 11 graduates and 20 employers. Graduates in Food Processing received the highest starting salaries while the other graduates received fairly equal starting pay. Incomplete data and a small response for Horticulture and Agri-Equipment graduates make definite conclusions difficult. Present salaries, as reported by 17 employers averaged $586.00 with Horticulture graduates leading the other programs. Salary progressions average $5.52 per month. All figures are up substantially from the findings by Becker and represent a substantial increase over the cost-of-living "boost". Some discrepancies between employers and graduates responses on Table 44 can be attributed to varying numbers of responses from the two groups, inclusion of net income on the part of the graduates and some fringe benefit inclusion on the part of the employers.

Value of phases of technical school

Graduates generally rated classwork in agriculture as the most valuable and school clubs and social activities as least valuable. Most other phases were of "average" value. They were thus in agreement with second-year students and previous graduates. However, the 1968 graduates differed in value placed on on-the-job training and classwork other than agriculture as indicated in Table 45. The low rating of social activities and on-the-job training may have been due to the lack of provision for these phases in some of the particular programs assessed.

Value of previous experience

Graduates rated, 1-2-3, the value of their previous experiences to their present position. The experiences, number of times each was rated and the mean value are given in Table 46. Technical school education was rated by 20 graduates and received 1.70, the highest mean rank by virtue of the large percentage of first place rankings. High school education followed closely with a 1.79 mean rank. Other agricultural employment, farm experience, company educational programs, and youth leadership activities were of somewhat less importance. Other employment was ranked lowest of all experiences. In Becker's study the graduates' employers reacted in like manner, however, they ranked farm experience and other experience higher than did the 1968 graduates.

Need for supervised occupational experience

Eighty-seven per cent of the 1968 graduates responding to the questionnaire thought supervised occupational experience should be included in the technical agriculture program. All the Horticulture and Agri-Equipment graduates indicated a positive response; one Agri-Business graduate and two Food Processing graduates were undecided, as portrayed in Table 47. This corresponds with the findings by Becker except that he found several Food Processing graduates who were opposed to supervised occupational experience during the program.

Influences on selection of a position

Students within the programs indicated that advancement, desirable working conditions, rate of pay and opportunity for additional training were major factors in selecting the first position upon completion of the program. Graduates agreed, but added that the personality and attitude of the person doing the hiring was important. Table 48 presents the factors and persons which influenced graduates in selection of a position. These findings are similar to those reported by Becker.

Employer rating of graduates

In the preceding section characteristics of graduates were determined by surveys of the 1968 graduates one year after completion of their courses. For this portion of the study, additional data on 1968 graduates were secured directly from their employers. The following represents the views of the respondents from among the 30 employers sent questionnaires.

Job titles of graduates

Employers of graduates in the various technologies were asked to list the job titles. As seen in Table 49, a variety of job titles were revealed. Agri-Business graduates had management, sales, and laborer titles plus the one graduate who was hired as a grain buyer. Limited response by Agri-Equipment employers showed two graduates that were titled laborer and serviceman. Food Processing graduates were listed as food technologists or inspectors. Horticulture graduates were foremen or gardeners.

Anticipated income after five years

Employers expected graduates to earn from $6,000 to $12,000 per year after being on the job five years. They further anticipated that 72 per cent of the graduates would be in the $8,000 to $11,000 category. This is compared to the 71 per cent estimated by employers in Becker's study to be in the $7,000 to $10,000 bracket after five years on the job. This tends to indicate a higher salary potential for new graduates in in agricultural technologies.

Rating of graduate job skills

Employers of graduates from three technical programs rated their employees on eight job skill criteria as summarized in Table 51. All graduates were rated above average in job skills appropriate to their technology. Orderliness was rated the highest and salesmanship was generally ranked lowest of job skills.

Training provided by employers

Employers indicated they provided limited training to graduates. Three Agri-Business graduates were provided an average of 55 hours of on-the-job instruction while one graduate received 24 hours of formal instruction. Becker found that some graduates in each program received varying amounts of formal or informal instruction.

General rating of graduates

Employers in three technical programs rated their employees compared to other new employees on the basis of 1=Very Poor, ...and 5= Superior. Agri-Business graduates received a 4.4 mean rating and Food Processing and Horticulture graduates a mean of 3.6. Overall graduate rating was 3.8, which is just above "average"; Becker's overall mean rating was 3.7. Specific ratings can be seen in Table 52.

Willingness to hire other graduates

Table 53 shows that two-thirds of the employers responding indicated they would definitely hire other graduates from the respective technical agriculture programs. The other one-third said they would hire others, but with reservations. Food Processing employers expressed no reservations, the two Agri-Equipment employers both said they had reservations and the Agri-Business employers had a higher proportion of reservations than did the Horticulture employers. Becker reported that 76 per cent of employers would hire without reservations, 22 per cent had reservations and only two per cent would not hire other graduates.

General traits
abilities and understandings

This section reviews the general traits, abilities and understandings of students and graduates as rated by themselves and their employers.

General traits

Second-year students and 1968 graduates rated themselves on the basis of 12 general traits shown in Table 54. In addition, employers rated the 1968 graduates on the same traits. Students and graduates generally rated above average in all twelve attributes with only moderate differences noticeable between ratings given by the three rating groups. The 54 students rated themselves highest in responsibility, cooperation and integrity; they rated themselves lowest in judgement, emotional stability and personal appearance. Becker's study turned up a similar pattern. Graduates rated themselves highest in responsibility, dependability, initiative and personal appearance and thought their lowest qualities were emotional stability, judgment and leadership. Employers gave graduates higher ratings for integrity, courtesy and personal appearance while rating them lowest in leadership, initiative and judgment. Employers and coordinators in Becker's study made a similar rating of graduates. All three groups rated students and graduates high in responsibility and integrity and lowest in judgment and emotional stability.

General abilities

A list of 15 general abilities common to all four technical agriculture programs was submitted to second-year students and 1968 graduates for their rating and to employers for their opinion of importance of the abilities and proportion of 1968 graduates.

Table 55 includes data concerning the mean ratings for the importance of these general abilities. Graduates and employers were basically agreed upon the importance of the listed general abilities, but some difference existed. Employers listed supervision of employees, telephone communication, human relations in speaking and writing, and listening and comprehension as the most important abilities. Accounting, credit analysis, letter dictation and use of financial statements were least important. Graduates thought ability to do arithmetic, read with understanding, listen and comprehend and communicate over the telephone were most important and that ability to dictate letters, use parliamentary procedure and do accounting were least important. Becker found a .88 correlation between employers and graduates in their ratings of similarly ranked general abilities.

Table 56 shows the preparation of students and graduates in general abilities as self rated and as judged by employers of the 1968 graduates. Some disagreement existed among raters. Employers rated the 1968 graduates above average in listening and comprehension, telephone use, arithmetic, grammar, reading and speaking and writing. They rated graduates low in ability to do accounting, analyze credit to customers, dictate

letters and prepare financial statements. According to employers, graduates were average in training in over one-half of the important abilities and, conversely, had low ability in those areas cited as unimportant. Graduate and student responses indicated a high degree of agreement with employers, although a higher average rating was given by self-raters than was given by employers. Since the graduate rating made by employers and the student and graduate self-rating results were so similar (Becker reported a .83-.90 correlation, respectively, between these three groups) it can be concluded that programs in technical agriculture have provided adequate and consistent skill development training.

General understandings

A list of 15 general understandings were rated by employers and graduates for importance. The 1968 graduates were rated by their employers and the students and graduates rated themselves on preparation in the same general understandings. There was considerable agreement between rating groups as to both importance of and preparation in general understandings. As revealed in Table 57, employers and graduates felt that understanding problems of agricultural business, consumer demands, principles of merchandising and the government's role in agriculture were important. Graduates differed by having principles of credit and advertising in first and second place, respectively. These were considered of lesser importance by employers. Graduates and employers also disagreed on the least important understandings.

As reported in Table 58, graduates and students felt themselves to be above the midpoint of five in nearly all 15 understandings and rated themselves generally highest in the important understandings. The mean value employers of 1968 graduates placed on their employee's understandings was below the midpoint of five. Students felt least prepared in understanding types of economic systems, principles of merchandising and general accounting. Graduates rated themselves lowest in knowledge of types of economic systems and price cycles. Becker found little correlation in responses from the three groups in his study.

Technical abilities and understandings

This section reports on the technical abilities and understandings specific to each technical agriculture program. Since each program differed, technical abilities and understandings could not be combined nor could comparisons be made between programs. Levels of preparation and comparisons between ratings by students, graduates and employers were assessed, however.

Preparation in technical abilities--Agri-Business program

Students and graduates of the Agri-Business program self-evaluated their preparation in the 20 technical abilities listed in Table 59. Employers also were asked to rate graduates on the same list. All three groups agreed that students and graduates were most prepared to grade grain; they also basically agreed in the high preparedness for operation

of office machines and calculation of feed and fertilizer proportions in mixing operations. Graduates rated themselves lowest, and were concurred with in this by their employers, in the ability to secure new employees and to train, motivate and evaluate employees. Students and graduates rated themselves higher in most abilities than did employers; however, there was a greater agreement on relative ranking of items between employers and graduates than there was between employers and students or graduates and students. These findings are reflected by similar results reported by Becker, who found a correlation of .79 between employers and graduates.

Preparation in technical understandings--Agri-Business program

Table 60 reports on the preparation of students and graduates in selected technical understandings taught in technical agriculture programs. A pattern developed in the technical understandings similar to the one which appeared in technical abilities--graduates and students generally rated themselves higher in technical understandings than did employers. Graduates and employers were more in agreement with each other on the relative rank of preparedness in the various understandings than they were with students. Handling grain, livestock feeding, fertilizer uses and livestock diseases were understandings in which graduates were rated high by themselves and their employers. Similar results were recorded by Becker. All three groups rated preparation in understanding feed and labor laws the lowest.

Preparation in technical abilities--Agri-Equipment program

Incomplete Agri-Equipment employer responses left only graduates and students rating themselves in technical abilities as shown in Table 61. Though ratings by students and graduates were at similar levels on the rating scale, they varied in relative rating of several abilities. Both groups were in basic agreement as to their ability to recognize safe use of electricity, properly adjust farm machinery and recommend field machinery to farmers. They were not in agreement as to which abilities were lowest in rating. Becker found a .70 correlation between graduates and students and moderate agreement as to their ability to "trouble shoot" a tractor engine, recognize safe use of electricity, recommend electric motors, and to read blue prints.

Preparation in technical understandings--Agri-Equipment program

Student and graduate self-ratings in Agri-Equipment technical understandings are listed in Table 62. Some agreement in level of rating is apparent but the groups differ in relative rating of preparation in the understandings. Graduates rated highest the understanding of types of farm machinery and nomenclature of a tractor power train; students put principles of engines and types of farm machinery first. Low understanding for graduates was in knowledge of job opportunities in the equipment industry; for students, low rating went to understanding principles of insecticide application. The lower the rating, the lower the preparation was considered to be, thus understandings at the lower rating levels were probably not adequately learned at technical school.

Preparation in technical abilities--Food Processing program

Graduates, students and employers of graduates from the Food Processing program rated the preparation of students and graduates in 51 technical abilities indicated in Table 63. Because of the large number of technical abilities and the small number of respondents it was difficult to match high values. However, all respondent groups apparently agreed that preparation was highest in the abilities to: recognize and correct unsanitary plant conditions, determine adulteration of food products, record quality control data and inspect filled containers for proper weight. Becker found all three groups in agreement that the best preparation was in the abilities to recognize and correct unsanitary plant conditions and inspect filled containers for proper weight. No apparent agreement on low abilities was reached.

Preparation in technical understandings--Food Processing program

Graduates and students rated themselves, and graduates were rated by their employers on their preparation in 52 technical understandings shown in Table 64. All three groups concurred in the high rating given understanding of importance of plant inspectors, principles of canning foods and sanitation methods. Becker's study groups agree only with the high rating of importance of plant inspectors. No pattern of agreement can be discerned on understandings rated lowest.

Preparation in technical abilities--Horticulture program

Graduates and students rated themselves and employers rated graduates in preparation for 37 abilities in Table 65. Students generally felt best prepared in landscaping activities and least capable in certain plant-growing abilities. These findings concur with those of Becker's study. Graduates rated themselves highest in abilities to operate and maintain horticultural equipment and lowest in analysis of plant processes and correction of soil deficiencies with lime and fertilizers. Employer response showed graduates rated highest in ability to safely use pesticides, identify common plant materials and use fertilizers; they rated graduate ability lowest in planning for soil management in greenhouses and planning irrigation systems. There appeared to be little common agreement among the three rating groups.

Preparation in technical understandings--Horticulture program

Students and graduates rated themselves on 25 technical understandings. Graduates were also rated by their employers. The results are found in Table 66. There was little agreement between the three groups as to the ratings given. Students rated their understandings of landscape design principles and landscape architecture highest and knowledge of chemistry lowest. Graduates considered themselves most knowledgeable in fertilizers, plant growth, and soil relationships. They felt least prepared in understanding atomic structure in chemistry and job opportunities as a horticultural technician. The common employer of horticulture graduates indicated the greatest understanding of graduates was in the atomic

structure in chemistry, fertilizer, soil improvement materials and methods of job and employee evaluation; employees were rated least knowledgeable in landscape architecture, soil microorganisms, plant propagation and forms of plant life. Becker found students felt least adequately prepared in knowledge of landscaping, the horticulture industry, engines and equipment, and insect and disease problems and control.

General Findings and Conclusions

The major findings and conclusions from the study are as follows:

1. In Ohio, technical education in agriculture has grown at a rate of one new program, 33 additional students, and eleven more graduates per year, on the average. A trend for higher enrollment and more programs and graduates has developed. Dropout rates have been, on the average, fairly stable (in the low 20 per cent category) but appear to be substantially lower as the programs mature.

2. Age of enrollees averaged 18.8 years in 1968--down from 20.1 over the past five years. This indicates that more students entered technical agriculture programs immediately after completion of high school while fewer adults entered the programs. Enrollees in 1968 came from somewhat larger families than in the past.

3. Technical agriculture programs drew more than one-half of their enrollment from a radius of 50 miles or less from the technical institute. The Agri-Equipment and the Recreation and Wildlife programs were more

successful in attracting distant students than were the other programs. Programs with most students living within 50 miles of the school had a nearly proportional number commute daily between their homes and the technical institute. Programs which attracted students from the greatest distances had fewer commuting students.

4. More than one-half the enrollees were from farm homes. Most Agri-Business and Agri-Equipment students were from farms while nearly all Food Processing and Horticulture students were from urban residences. The closer the technology was tied to farming, the higher the proportion of students with a farm background.

5. Most 1968-69 enrollees in technical agriculture programs worked during high school and during the period between high school graduation and their starting technical school. During high school nearly three-fourths worked in agriculture but after high school graduation 60 per cent worked in non-agricultural jobs. Short term job availability and the desire to do other types of work probably affected this situation.

6. Many students enrolled in technical agriculture programs because they desired contact with the out-of-doors. Some enrollee's desires were not consistent with the agricultural program they were in and therefore they probably needed career-counseling assistance.

7. Better quality, above-average high school students enrolled in technical agriculture programs than in previous years. Over one-half had taken vocational agriculture in high school, although this number had diminished from past enrollees. Students probably needed the most help in English in their technical programs.

8. Students continued their education beyond high school in technical agriculture programs primarily because they believed it would increase their earning power, but parental influence and social prestige were more prevalent as reasons than Becker's study showed. Military deferment had little influence. Students generally made up their own mind with little influence from others who enrolled in a technical agriculture program. A number of factors including location, open house, low tuition, work while in school, contacts with representatives were important to potential enrollees.

9. Enrollees were generally pleased with technical school as indicated by their willingness to recommend that friends enroll.

10. Technical school grades for students finishing in 1969 were somewhat depressed from the previous years, with the exception of those in Food Processing. This may be attributed to the advanced development of the programs.

11. High school grade point average, I. Q., class rank and English grades were the best indicators of technical school success as measured by grades. Mathematics and vocational agriculture grades were weak indicators.

12. A majority of students worked nearly 30 hours per week for about 28 weeks during technical school. Most worked full time in the intervening summer. Summer and second year work was primarily in training-related jobs, indicating the emphasis placed on gaining experience in the technology.

13. Concern for desirable employment, opportunity for training and advancement, and higher pay influenced students both in completion of the technical program and in selection of the first position.

14. Vocational agriculture, mathematics, science and English were rated highest of all high school courses and of slightly more value to the job than to technical school classwork. Foreign language and social studies were of little value in both areas but was less important to future employment as judged by students. Fine arts activities were rated of little value. FFA activity was rated highest in both areas.

15. On-the-job training and classwork in agriculture were prized most by students in respect to their future employment. Counseling and school activities were of least value--due, perhaps, to the lack of development of these phases of the technical program. Students generally saw more transfer value to the future job in technical courses than in the more general classes. Nearly all students desired some type of student organization for social and school adjustment and leadership development. According to students, an individual's desire to attend, coupled with interviews with technical school staff, should carry more weight in student selection than records or recommendations from the past.

16. Upon graduation most students took training-related jobs and stuck to them. One year after graduation nearly two out of three graduates had been employed as an agricultural technician, one out of four had taken other jobs and one out of five had experienced military service, unemployment or further education. After one year about half of the graduates

were in the military. Nearly two-thirds of the remaining respondents were employed as agricultural technicians. Most working graduates held only one job since graduation; one half had worked for the same boss prior to completing technical school. Three-fourths of all graduates were happy with their present jobs. Those who changed jobs did so for more pay or advancement, to enter the military or due to lay-offs. Most graduates said they would re-enroll, if they had it to do over again.

17. Salaries of graduates rose substantially from previous years. Food Processing graduates demanded the highest starting salaries while Agri-Business graduates progressed at a more rapid rate.

18. Graduates valued technical school education over other selected experiences; within the technical program, they prized classwork in agriculture the most and social club activities and on-the-job training the least, although this varied by program.

19. Advancement, employer's personality, training opportunities, working conditions and rate of pay were considered important factors by graduates in selection of a position.

20. Salary expectations after five years on the job were higher for participants in this study than were expressed by previous respondents.

21. Employers reporting on job skills indicated that graduates were adequately prepared for the duties they needed to perform on the job. Graduates of three out of four programs were rated above average compared to other new employees. No 1968 graduates were rated "very poor".

All employers would hire other graduates but one-third said they would have some reservations.

22. Students and graduates considered themselves above average in 12 general traits helpful to technician work. Employers concurred, especially in the high areas of responsibility and integrity and the lower rated areas of judgment and emotional stability.

23. Technical agriculture programs were consistent in providing adequate development of important general abilities. Employers, graduates and students were in basic agreement as to which general skills were important and the level of general abilities possessed by students and graduates of technical programs. Communication skills were listed as most important and the area of greatest preparation by all groups.

24. Graduates, students and employers generally concurred in the importance of and high levels of preparation in the following general understandings: problems of agricultural business, consumer demands and principles of merchandising and the role of government in agriculture. Graduates and students tended to rate themselves higher than employers rated graduates in general understandings, thus there was an apparent need for more adequate information on the levels of understandings required of technicians. This need existed both in technical school and on the job.

25. There was limited agreement among students, graduates and employers in all four technologies as to preparation in technical abilities and understandings. Students and graduates generally rated themselves

with higher values than employers rated their graduate employees. This appears to indicate a disparity between students and employers as to what levels of ability and understanding are expected of the agricultural technician.

APPENDIX

Appendix A.-- DATA COLLECTION INSTRUMENTS
ON FILE IN THE AGRICULTURAL EDUCATION
DEPARTMENT, THE OHIO STATE UNIVERSITY.

Appendix B.-- TABLES

Table 1

RESPONSE BY 1967-68 GRADUATES TO THE MAILED SURVEY USED IN THE STUDY

	N	Per cent of all Graduates
Total Graduates	55	100.0
Total Responses	27	49.1
Useable Responses	24	43.6
Unuseable Responses	3	5.5
Nonrespondents		
Military or Overseas Service	21	38.2
Other	7	12.7

Table 2

RESPONSE BY EMPLOYERS TO THE MAILED SURVEY USED IN THE STUDY

	N	Per cent of all Employers in Study
Total Employers	30	100.0
Total Responses	23	76.7
Useable Responses	19	63.3
Partially Useable Responses	2	6.7
Unuseable Responses	2	6.7
Non-respondents	7	23.3

Table 3

INITIAL ENROLLMENT IN TECHNICAL AGRICULTURE PROGRAMS
BY YEAR

Program	1963	1964	1965	1966	1967	1968
Agri-Business						
Clark County	17	28	25	24	31	36
Penta	--	--	--	--	--	39
Agri-Equipment	--	13	13	27	28	18
Food Processing	--	--	13	17	18	8
Forestry	--	--	--	--	--	34
Horticulture	--	--	--	22	11	9
Recreation and Wildlife	--	--	--	--	--	39
All Programs	17	41	51	90	88	183
Average per program	17	20.5	17	22.5	22	26.2

Table 4

GRADUATES AND POTENTIAL GRADUATES
FROM TECHNICAL AGRICULTURE PROGRAMS BY YEAR

	Graduates					Potential Graduates
Program	1965	1966	1967	1968	1969	1970
Agri-Business						
Clark County	12	18	25	16	23	28
Penta	--	--	--	--	--	29
Agri-Equipment	--	9	11	15	18	14
Food Processing	--	--	11	12	10	6
Forestry	--	--	--	--	--	23
Horticulture	--	--	--	12	6	8
Recreation and Wildlife	--	--	--	--	--	32
All Programs	12	27	47	55	57	140

Table 5

TOTAL ENROLLMENTS, GRADUATES, PRESENT ENROLLEES AND DROPOUTS BY TECHNICAL AGRICULTURE PROGRAM--1968-69

Program	Total Number Enrolled	Total Number Graduated	Total Number Still Enrolled	Total Number Dropouts	Per cent Dropouts Total Enrolled
Agri-Business					
Clark County	61	23	28	10	16.4
Penta	39	--	31	8	20.5
Agri-Equipment	39	18	12	9	23.1
Food Processing	21	10	8	3	14.3
Forestry	34	--	21	13	38.2
Horticulture	15	6	7	2	13.3
Recreation and Wildlife	39	--	28	11	28.2
TOTAL	248	57	135	58	23.4

Table 6

AGE OF ENROLLES IN TECHNICAL

AGRICULTURE PROGRAMS

Program	N	Mean	Range
Agri-Business (Clark County)	28	19.1	17-32
Agri-Business (Penta)	29	18.4	17-24
Agri-Equipment	14	18.2	18-20
Food Processing	3	18.0	17-19
Forestry	20	19.2	17-23
Horticulture	8	18.2	17-19
Recreation & Wildlife	28	19.2	17-26
All Programs	130	18.8	17-32

Table 7

FAMILY SIZE OF ENROLLEES IN TECHNICAL AGRICULTURE PROGRAMS

Program and School	Average Number Brothers	Average Number Sisters	Number of Children in Family
Agri-Business (Clark County)	2.08	2.26	4.34
Agri-Business (Penta)	1.79	1.60	3.39
Agri-Equipment (Clark County)	1.33	1.54	2.87
Food Processing (Columbus Tech.)	1.67	1.00	2.67
Forestry (Tri-County)	1.86	2.00	3.86
Horticulture (Cleveland Tech.)	1.50	1.17	2.67
Recreation & Wildlife (Tri-County)	2.10	2.18	4.28
All Programs	1.88	1.86	3.74

Table 8

DISTANCE FROM HOME RESIDENCE TO

TECHNICAL INSTITUTE ATTENDED

Miles	Agri-Business Clark Co.	Penta	Agri-Equipment	Food Processing	Forestry	Horticulture	Recreation & Wildlife	Total Number of Enrollees Per cent
0-25	10	11	2	3	9	5	6	46 (35.4)
26-50	7	8	0	0	3	0	6	24 (18.5)
51-75	5	3	2	0	5	0	3	18 (13.8)
76-100	2	3	2	0	1	0	1	9 (6.9)
101-200	4	3	7	0	2	2	9	27 (20.8)
Over 201	0	1	1	0	0	1	3	6 (4.6)

Table 9

NUMBERS AND PERCENTS OF

COMMUTING STUDENTS

IN TECHNICAL AGRICULTURE PROGRAMS

Program	Number of Students Reporting	Number of Students Commuting	Percent of Students Commuting
Agri-Business (Clark County)	28	16	57.1
Agri-Business (Penta)	28	16	57.1
Agri-Equipment	14	2	14.2
Food Processing	3	3	100.0
Forestry	20	12	60.0
Horticulture	8	5	62.5
Recreation & Wildlife	27	9	33.3
All Programs	128	63	49.2

Table 10

ENRCLLEE RESIDENCE DURING HIGH SCHOOL

Program	Number Enrollees Reporting Farm Residences	Rural Non-Farm	Urban Residences
Agri-Business (Clark County)	24	3	1
Agri-Business (Penta)	26	1	2
Agri-Equipment	12	2	0
Food Processing	0	0	3
Forestry	7	5	8
Horticulture	1	1	6
Recreation & Wildlife	12	5	11
All Programs	82	17	31

Table 11

OCCUPATIONS OF FATHERS OF ENROLLEES

IN TECHNICAL AGRICULTURE PROGRAMS

Program	Number of Fathers Employed in: Full-Time Farming	Agri-Business	Non-Agri-Business	Retired	Father Deceased
Agri-Business (Clark Co.)	15	2	7	2	1
Agri-Business (Penta)	16	1	11	1	0
Agri-Equipment	9	1	4	0	0
Food Processing	0	0	3	0	0
Forestry	3	0	16	0	0
Horticulture	0	2	5	1	0
Recreation & Wildlife	5	0	19	5	1
All Programs	48 (36.9%)	6 (4.6%)	65 (50%)	9 (6.9%)	2 (1.6%)

Table 12

EMPLOYMENT BY TECHNICAL AGRICULTURE

ENROLLEES WHILE IN HIGH SCHOOL

Program	Number Reporting Employment					
	N	None	Home Farm	On Different Farm	In Agri-Business	In Non-Agri-Business
Agri-Business (Clark Co.)	28	1	21	6	7	5
Agri-Business (Penta)	29	0	26	7	6	1
Agri-Equipment	14	1	8	4	2	1
Food Processing	3	0	0	0	1	2
Forestry	20	6	5	1	1	9
Horticulture	8	1	1	1	5	3
Recreation & Wildlife	28	5	10	4	1	9
All Programs	130	14 (10.7%)	71 (54.6%)	23 (17.7%)	23 (17.7%)	30 (23.9%)*

* Percent comes out to more than 100 % because several students worked in more than one category.

Table 13

EMPLOYMENT BETWEEN HIGH SCHOOL AND ENTERING TECHNICAL SCHOOL AS INDICATED BY ENROLLEES

Program	N	No	Yes Part time	Yes Full time
Agri-Business (Clark County)	28	4 (14.2%)	7 (25.0%)	17 (60.7%)
Agri-Business (Penta)	29	5 (17.2%)	2 (6.8%)	22 (75.8%)
Agri-Equipment	14	1 (7.1%)	3 (21.4%)	10 (71.4%)
Food Processing	3	2 (66.6%)	1 (33.3%)	0 (0.0%)
Forestry	20	1 (5.0%)	5 (25.0%)	14 (70.0%)
Horticulture	8	2 (25.0%)	1 (12.5%)	5 (62.5%)
Recreation & Wildlife	28	6 (21.4%)	12 (52.8%)	10 (35.7%)
All Programs	130	21 (16.1%)	31 (23.8%)	78 (60.0%)

Table 14

TYPE OF EMPLOYMENT BY ENROLLEES IN TECHNICAL AGRICULTURE PROGRAMS BETWEEN HIGH SCHOOL GRADUATION AND ENROLLMENT IN PROGRAM

Program	N	Farming	Agri-Business	Non Agri-Business
Agri-Business Clark County	24	8	6	10
Agri-Business Penta	24	6	3	15
Agri-Equipment	13	5	3	5
Food Processing	1	0	1	0
Forestry	19	2	0	17
Horticulture	6	0	4	2
Recreation and Wildlife	22	3	2	17
All Programs	109	24 (22%)	19 (17.4%)	66 (60.6%)

Table 15

DESIRABILITY OF WORK CONDITIONS
AS INDICATED BY ENROLLEES OF TECHNICAL AGRICULTURE PROGRAMS [a]

Work Situation	Agri-Business Clark Co. N=27	Agri-Business Penta N=27	Agri-Equipment N=14	Food Processing N=3	Forestry N=20	Horticulture N=8	Recreation and Wild Life N=28	All Programs N=127
Work out of doors	7.9	8.0	7.2	5.0	8.2	8.5	8.8	8.1
Work with plants and animals	6.9	7.0	5.1	5.3	7.8	8.2	8.2	7.2
Work with your hands	6.6	6.7	7.2	6.0	7.2	6.9	6.9	6.8
Manager, assistant	8.1	6.2	5.9	7.0	4.9	5.8	7.0	6.5
Work with machinery	6.5	7.2	7.7	6.3	6.3	5.5	5.4	6.4
Owner	7.0	6.9	6.9	4.0	5.2	5.2	5.7	6.3
Working foreman	6.0	5.6	6.1	5.3	5.8	7.2	5.5	5.8
Supervision of others	6.8	5.0	5.5	6.7	5.6	6.5	4.7	5.6
Work for on a weekly, monthly salary	6.5	5.2	4.4	5.7	5.2	4.7	5.5	5.4
Working for an hourly wage	4.9	5.4	6.4	4.3	5.6	4.0	5.7	5.4
Forty-hour week or less	5.3	4.2	3.7	7.7	5.2	3.4	5.6	4.9
Educational or promotional work	4.6	3.9	5.4	4.7	4.0	3.9	3.7	4.2
Sales work, in a business	5.3	4.7	5.2	3.3	2.3	3.0	1.6	3.7
Sales work on the road	4.5	4.6	6.1	2.3	2.4	2.5	2.0	3.6
Office work	4.6	3.9	3.5	5.7	2.4	3.0	2.8	3.5

[a] Based on a mean from a nine-point scale, nine indicating most desirable.

Table 16

CREDITS COMPLETED AND GRADE POINT AVERAGE
BY SUBJECT MATTER AREA OF ENROLLEES IN
TECHNICAL AGRICULTURE PROGRAMS

Program High School Courses	N	Mean Credits Completed	GPA[a]
Agri-Business--Clark County	28	----	2.41
English	28	3.50	2.01
Mathematics	28	2.14	2.17
Science	28	2.57	2.23
Vocational Agriculture	22	3.82	3.10
Agri-Business--Penta	27	----	2.33
English	27	3.41	1.73
Mathematics	27	1.78	1.99
Science	26	2.12	2.10
Vocational Agriculture	20	3.60	2.91
Agri-Equipment	13	----	2.43
English	13	3.46	2.03
Mathematics	13	2.15	2.07
Science	13	2.69	2.03
Vocational Agriculture	11	3.91	3.19
Food Processing	6	----	1.81
English	6	3.50	1.78
Mathematics	6	2.83	1.68
Science	6	1.83	1.89
Vocational Agriculture	2	4.00	2.62
Forestry	21	----	2.50
English	21	3.76	2.32
Mathematics	19	2.47	2.09
Science	21	2.48	2.37
Vocational Agriculture	6	3,50	3.36
Recreation and Wildlife	25	----	2.06
English	25	3.76	1.84
Mathematics	25	2.00	1.94
Science	25	2.48	1.86
Vocational Agriculture	7	2.86	2.57

Table 16, Continued

Program High School Courses	N	Mean Credits Completed	GPA[a]
All Programs	120	----	2.36
English	120	3.58	1.96
Mathematics	118	2.12	2.03
Science	119	2.41	2.11
Vocational Agriculture	68	3.65	3.01

[a] Grade Point average calculated on the four-point system.

Table 17

HIGH SCHOOL GRADE POINT AVERAGE, CLASS RANK AND INTELLIGENCE QUOTIENT SCORES OF ENROLLEES IN TECHNICAL AGRICULTURE PROGRAMS

Program	N	GPA[a]	N	Class Rank Per-centile	N	I.Q.
Agri-Business--Clark County	28	2.41	25	48.0	28	104.1
Agri-Business--Penta	27	2.33	22	57.8	8	100.0
Agri-Equipment	13	2.43	12	48.7	14	106.6
Food Processing	6	1.81	5	59.2	3	90.7
Forestry	21	2.50	17	48.2	3	100.3
Recreation and Wildlife	25	2.06	17	66.5	7	101.6
All Programs	120	2.36	98	54.1	63	103.0

[a] Grade Point Average calculated on a four-point scale.

Table 18

FACTORS WHICH INFLUENCED ENROLLEES TO

CONTINUE THEIR EDUCATION BEYOND HIGH SCHOOL [a]

Factor	Agri-Business Clark Co. N=28	Agri-Business Penta N=29	Agri-Equipment N=14	Food Processing N=3	Forestry N=20	Horticulture N=8	Recreation and Wild Life N=28	All Programs N=130
Increased earning ability	7.7	6.9	7.7	8.0	5.9	5.9	5.3	6.6
Desire of parents, relatives, friends	5.4	5.3	4.7	6.3	4.4	3.8	4.8	4.9
Lack of employment opportunities	5.2	3.1	4.4	4.3	3.4	2.4	3.6	3.9
Social prestige	4.6	4.4	4.9	6.7	2.6	3.0	2.9	3.8
Enjoy school work	4.1	4.1	3.7	5.7	3.9	3.2	3.4	3.8
Friends continuing in school	4.4	4.1	3.8	4.7	3.8	1.9	2.5	3.6
Military deferment	2.6	3.7	3.6	4.0	2.6	3.1	2.4	3.0
Desire of employer	3.1	2.4	2.9	5.0	2.3	3.4	2.9	2.8

[a] Based on a mean of a nine-point scale, with nine indicating major influence.

Table 19

PERSONS WHO INFLUENCED ENROLLEES TO ENROLL IN A PARTICULAR TECHNICAL AGRICULTURE PROGRAM [a]

Persons	Agri-Business Clark Co. N=28	Agri-Business Penta N=29	Agri-Equipment N=14	Food Processing N=3	Forestry N=20	Horticulture N=8	Recreation and Wild Life N=28	All Programs N=130
Other	5.3	6.4	6.2	3.0	4.4	5.7	6.0	5.5
Parents	5.1	5.1	4.5	4.7	4.9	3.6	5.3	4.9
Guidance counselor, high school	3.5	4.6	4.8	4.3	3.6	2.5	3.2	3.8
Friends	4.2	3.9	3.4	3.3	3.4	1.7	3.5	3.6
Technical School representative	3.5	4.3	3.6	3.3	3.0	3.4	3.2	3.6
Vocational agriculture teacher	3.8	5.2	4.5	2.7	1.8	3.0	1.9	3.4
Other high school teachers	2.6	4.4	3.7	3.0	3.0	2.6	2.6	3.2
Other relatives	3.1	3.2	2.6	1.7	2.6	1.4	2.7	2.7
Employer	2.2	2.5	2.6	4.5	2.1	3.5	1.9	2.3
High school administrator	1.7	2.6	2.6	4.0	2.5	2.1	2.0	2.3
Wife	1.4	1.7	1.0	1.0	1.8	1.2	1.8	1.5

[a] Values are based on a means from nine-point scale, nine indicating major influence.

Table 20

FACTORS WHICH INFLUENCED ENROLLEES TO ENROLL

IN A PARTICULAR TECHNICAL AGRICULTURE PROGRAM [a]

Factors	Agri-Business Clark Co. N=28	Agri-Business Penta N=29	Agri-Equipment N=14	Food Processing N=3	Forestry N=20	Horticulture N=8	Recreation and Wild Life N=28	All Programs N=129
Location of school	4.6	5.1	2.7	3.7	5.0	3.2	5.2	4.6
Low school tuition	4.0	3.9	4.7	2.3	5.2	3.5	5.8	4.6
Ability to work while attending school	5.0	5.2	3.1	2.7	3.6	5.9	2.8	4.1
Newspaper article or other type of publication describing the program	3.0	3.6	3.8	2.0	4.1	4.9	5.1	3.9
Visit with representative from the technical school	3.9	3.9	4.1	4.3	3.4	2.5	3.2	3.6
Open house at technical school	2.8	3.2	5.0	3.3	1.6	2.4	1.8	2.8

[a] Values are means from a nine-point scale, nine indicating major influence.

Table 21

ENROLLEE RESPONSES TO RECOMMEND FRIENDS ENROLL IN TECHNICAL AGRICULTURE PROGRAMS

Responses	Agri-Business Clark Co. N=28	Agri-Business Penta N=26	Agri-Equipment N=14	Food Processing N=3	Forestry N=20	Horticulture N=8	Recreation and Wild Life N=28	All Programs N=127
Definitely yes	15	14	8	2	10	2	14	65 (51.1%)
Yes, with reservations	12	12	5	1	9	3	14	56 (44.1%)
I doubt it	0	0	0	0	1	2	0	3 (2.4%)
No	1	0	1	0	0	1	0	3 (2.4%)

Table 22

TECHNICAL SCHOOL GRADE POINT AVERAGES OF
STUDENTS IN TECHNICAL AGRICULTURE PROGRAMS

Program	N	GPA[a]
Agri-Business	24	2.63
Agri-Equipment	20	2.59
Food Processing	6	3.17
Horticulture	4	2.82
All Programs	54	2.68

[a] GPA calculated on four-point scale.

Table 23

ASSOCIATION OF SELECTED VARIABLES WITH SUCCESS
IN TECHNICAL AGRICULTURE PROGRAMS AS MEASURED BY GPA

Variable	N	r[a]
High School GPA [b]	49	.49
I. Q.	46	.48
High School Class Rank	45	.46
High School English GPA	48	.41
High School Science GPA	48	.37
High School Math GPA	47	.36
High School Vo-Ag GPA	39	.31

[a] r=Person's Product Moment Correlation Co-efficient

[b] GPA=Grade Point Average

Table 24

NUMBER OF STUDENTS EMPLOYED AND TIME SPENT

WORKING WHILE ENROLLED IN TECHNICAL AGRICULTURE PROGRAMS

Program	Time Period	No Employment	Part-Time Employment	Full-Time Employment	Mean Hrs. Per Week	Mean Weeks/ Year
Agri-Busi-ness Clark County	1st Yr.	8	13	0	26.7	27.5
	2nd Yr.	5	16	0	23.0	25.8
	Summer	0	1	22	49.4	25.4
Agri-Equip-ment	1st Yr.	8	10	0	25.4	26.6
	2nd Yr.	5	12	2	24.9	22.6
	Summer	0	1	19	45.8	25.3
Food Proc-essing	1st Yr.	0	3	2	33.0	28.4
	2nd Yr.	0	3	3	30.0	38.6
	Summer	0	1	4	34.5	25.3
Horti-culture	1st Yr.	0	2	2	44.8	33.5
	2nd Yr.	0	1	2	46.8	33.0
	Summer	0	1	2	54.3	26.0
All Programs	1st Yr.	16	28	4	29.6	28.1
	2nd Yr.	10	32	7	27.0	27 0
	Summer	0	4	47	47.7	25.4

Table 25

TYPES OF EMPLOYMENT BY STUDENTS

WHILE ENROLLED IN TECHNICAL AGRICULTURE PROGRAMS

Program	Time Period	Number employed in: Farming	Agri-Business in Training Area	Other Agri-Business	Non-Agricultural Occupations
Agri-Business Clark County	1st Year	5	4	0	4
	2nd Year	4	9	0	4
	Summer	1	23	0	0
Agri-Equip-ment	1st Year	1	4	0	4
	2nd Year	0	5	2	6
	Summer	0	18	1	0
Food Process-ing	1st Year	0	0	0	6
	2nd Year	0	0	0	6
	Summer	0	0	1	3
Horti-culture	1st Year	0	4	0	0
	2nd Year	0	4	0	0
	Summer	0	3	0	0
All Programs	1st Year	6	12	0	14
	2nd Year	4	18	2	16
	Summer	1	44	2	3

Table 26

TYPES AND VALUE OF SUMMER EMPLOYMENT BY TECHNICAL AGRICULTURE STUDENTS

Experience	Agri-Business N	Agri-Business Mean Value	Agri-Equipment N	Agri-Equipment Mean Value	Food Processing N	Food Processing Mean Value	Horticulture N	Horticulture Mean Value	All Programs N	All Programs Mean Value [a]
Work for other than father in an agricultural related occupation	24	8.0	18	7.8	2	9.0	3	5.7	47	7.8
Work on father's farm	9	5.9	2	5.0	2	7.0	1	1.0	14	5.6
Work on other than father's farm	2	7.5	1	6.0	1	5.0	1	1.0	5	5.4
Work for father in an agricultural related occupation	1	7.0	1	8.0	0	0	1	1.0	3	5.3
Work for father in a non-agricultural occupation	0	0	0	0	1	9.0	1	1.0	2	5.0
Work for other than father in a non-agricultural occupation	2	3.5	0	0	2	7.0	3	3.7	7	4.6
Self-employed as a farmer	0	0	0	0	0	0	1	1.0	1	1.0
Self-employed in an agricultural related occupation	0	0	0	0	0	0	1	1.0	1	1.0
Self-employed in a non-agricultural occupation	0	0	0	0	0	0	1	1.0	1	1.0

[a] Mean value based on a 9 point scale, nine being of most value

Table 27

FACTORS INFLUENCING STUDENTS TO COMPLETE THE TECHNICAL AGRICULTURE PROGRAM[a]

Factor	Agri-Business N=24	Agri-Equipment N=20	Food Processing N=4	Horti-culture N=4	All Programs N=54
Believe it will help in obtaining more desirable employment	7.2	7.1	6.5	5.5	6.9
Believe it will help in advancing in an occupation	6.7	7.6	6.3	5.5	6.9
Believe the training will help to begin at a higher wage	6.6	6.9	7.2	6.0	6.7
Believe it provides a foundation for additional training and education	5.9	6.2	6.3	7.0	6.1
Enjoyed the educational experience	5.5	5.4	6.0	4.2	5.4
Desire of parents, wife, friends, teachers, or others to complete the program	4.4	5.4	2.0	4.5	4.5
Too much pride to quit	4.0	4.4	2.2	4.5	4.0
Desire to stay out of military service	2.8	3.7	4.5	3.8	3.4
Inability to obtain a desirable job	2.6	2.9	3.5	3.2	2.9
Desire to stay in school with your friends	2.7	3.2	1.3	2.5	2.7

[a] Values are a mean of a nine-point scale with nine indicating major influence.

Table 28

FACTORS OR PERSONS INFLUENCING STUDENTS IN SELECTION OF A POSITION UPON COMPLETION OF TECHNICAL AGRICULTURE PROGRAM[a]

Influencing Persons or Factors	Agri-Business N=24	Agri-Equipment N=20	Food Processing N=6	Horti-culture N=4	All Programs N=54
Opportunity for advancement	7.5	7.6	7.5	5.0	7.4
Desirable working conditions	7.2	7.0	7.3	6.5	7.1
Rate of pay	6.2	7.0	7.0	5.8	6.6
Opportunity for additional training with employing company	6.2	6.6	7.7	5.0	6.4
Personality and attitude of person doing the hiring	6.3	6.8	4.7	5.3	6.2
Desire for further education	5.2	5.3	7.2	5.2	5.4
Influence of parents, wife, relatives, or friends	4.3	5.8	2.3	4.8	4.7
Opportunity to live at home or near home	4.1	5.4	3.2	5.0	4.6
Present employer	3.6	5.4	5.3	4.5	4.5
Present technical school teachers	4.9	5.2	1.3	3.0	4.4

[a] Values are a mean of a nine-point scale with nine indicating major influence.

Table 29

VALUE OF HIGH SCHOOL COURSES AS REPORTED BY STUDENTS IN TECHNICAL AGRICULTURE PROGRAMS

High School Course	Number of students responding	Mean Value in [a] Technical school classwork	Future employment
Vocational Agriculture	42	7.4	7.4
Mathematics	53	5.9	6.6
Science	54	5.8	6.0
English	54	5.6	6.0
Commercial courses	41	5.4	5.5
Other vocational subjects	31	5.2	5.6
Social Studies	52	4.4	4.7
Foreign Language	23	2.2	2.5

Table 30

VALUE OF HIGH SCHOOL ACTIVITIES AS REPORTED BY STUDENTS IN TECHNICAL AGRICULTURE PROGRAMS

High School Activity	No. of students responding	Mean Value[a] in Technical School Classwork	Mean Value[a] in Future Employment
Officer--FFA	36	6.0	5.8
Member--FFA	39	5.9	5.4
Member--Other Activity	9	5.3	5.6
High School Class Officer	21	5.1	4.8
Athletic Team	37	4.9	4.3
Student Council	19	4.6	5.2
Debate, Forensics, Drama, etc.	27	3.6	3.7
Music, Band, Choir, etc.	33	3.2	3.2

[a] Mean value from a nine-point scale, nine indicating major value

Table 31

VALUE [a] OF SELECTED ASPECTS OF THE TECHNICAL AGRICULTURE PROGRAM AS RATED BY STUDENTS

Aspect of Program	Agri-Business N=24	Agri-Equipment N=20	Food Processing N=6	Horti-culture N=4	All Programs N=54
On-job training	8.0	8.0	6.8	6.5	7.8
Classwork in agriculture	7.0	5.8	6.2	2.8	6.2
Contact with other students with similar interests	6.3	5.8	5.2	6.0	6.0
Classwork other than agriculture	5.2	4.4	6.0	6.7	5.1
Individual counseling by faculty	5.4	4.8	4.0	3.0	4.8
School clubs and social activities	4.1	4.0	2.7	2.2	3.8

[a] Values are a mean from a nine-point scale, nine indicating major value.

Table 32

EXPECTED VALUE OF COURSES IN THE AGRI-BUSINESS CURRICULUM IN FUTURE EMPLOYMENT AS RATED BY 24 STUDENTS

Course	Mean Value[a]
Salesmanship	7.2
Economics	7.2
Marketing Agricultural Products	7.2
Agri-Business Management	7.1
Agricultural Economics	7.0
Credit and Finance	6.8
Personnel Problems	6.4
Mathematics	6.3
Communications	6.2
Farm Crops	6.1
Introduction to Agri-Business	6.0
Livestock Management	6.0
Soil Science	5.9
Accounting	5.8
Feeds and Feeding	5.8
Business Machines Operation	5.4
Retail Merchandising	5.2

[a] Values are a mean from a nine-point scale, nine indicating major value

Table 33

EXPECTED VALUE OF COURSES IN THE AGRI-EQUIPMENT CURRICULUM IN FUTURE EMPLOYMENT AS RATED BY 19 STUDENTS

Course	Mean Value [a]
Farm Power	7.0
Farm Machinery	7.0
Credit and Finance	6.9
Merchandise and Salesmanship	6.9
Communications	6.6
Mathematics	6.5
Personnel Problems	6.5
Agri-Business Management	6.5
Agricultural Economics	6.1
Introduction to Agri-Business	5.8
Farmstead Power and Equipment	5.7
Soils and Crops	5.5
Accounting	5.3
Farm Structures	5.2
Drawing	4.4

[a] Values are a mean from a nine-point scale, nine indicating major value.

Table 34

EXPECTED VALUE OF COURSES IN THE FOOD PROCESSING CURRICULUM IN FUTURE EMPLOYMENT AS RATED BY 6 STUDENTS

Course	Mean Value [a]
Quality Control	9.0
Food processing equipment and plant operations	9.0
Food Chemistry	8.8
Physics for food technology	8.7
Food Product evaluation	8.7
Food Plant sanitation	8.3
Food inspection and grading	8.2
Use of Testing instruments	7.8
Microbiology	7.8
Chemistry	7.3
Communications	7.2
Mathematics	7.0
Agricultural product procurement	7.0
Introduction to food processing	6.5
Human Behavior	6.4
Marketing of Processed Products	6.2
Principles of marketing	5.2
Economics	4.5
Accounting	4.2

[a] Values are a mean from a nine-point scale, nine indicating major value.

Table 35

EXPECTED VALUE OF COURSES IN THE HORTICULTURE CURRICULUM IN FUTURE EMPLOYMENT AS RATED BY 4 STUDENTS

Course	Mean Value [a]
Principles of Landscape Design	9.0
Plant Identification and Ecology	8.5
Equipment Technology	8.0
Plant Pathology and Entomology	8.0
Human Relations	7.5
Communications	7.2
Horticulture Industries	6.5
Drainage and Irrigation	6.5
Labor Supervision	6.5
Horticulture Science	6.2
Soil Science	6.2
Management of Horticultural Industries	6.0
Horticulture Chemistry	5.8
Business Principles	5.8
Horticulture Industries Economics	5.8
Mathematics	5.0
Accounting	3.0

[a] Values are a mean from a nine-point scale, nine indicating major value.

Table 36

PURPOSES AND ACTIVITIES OF A STUDENT ORGANIZATION FOR TECHNICAL STUDENTS

Purpose of activity	Agri-Business N=24	Agri-Equipment N=20	Food Processing N=4	Horticulture N=3	All Programs N=51
Provide social and recreational activities	6.7	7.0	7.5	5.7	6.8
Promote a cooperative attitude	6.5	6.6	7.5	3.7	6.4
Create a feeling of belonging	6.5	6.6	7.2	4.3	6.4
Add prestige to the technical program	6.3	6.5	6.5	4.3	6.3
Provide public relations for the technical program	6.4	6.4	6.0	4.3	6.2
Develop leadership abilities	6.5	6.3	6.5	2.7	6.2
Promote scholastic standards	5.8	6.4	6.8	2.0	5.9
Develop speaking ability	5.9	6.3	6.0	2.7	5.9
Aid in motivation for learning	5.8	5.8	6.8	2.7	5.7
Provide education experiences not provided by the technical school	5.5	5.7	6.2	4.3	5.6

[a] Values shown are means from a nine-point scale, with nine having major value.

Table 37

VALUE OF SELECTED FACTORS AND BASIS

FOR SELECTING STUDENTS FOR TECHNICAL AGRICULTURE PROGRAMS

Factors	Agri-Business N=24	Agri-Equipment N=20	Food Processing N=6	Horti-culture N=4	All Programs N=54
Students' reasons and desires for wanting to attend the school	7.2	7.6	7.2	5.0	7.1
Personal interview and screening process by technical school personnel	7.1	6.7	4.5	4.2	6.4
Grades in related high school vocational subjects	5.8	5.9	4.0	5.5	5.6
Previous work experience	5.4	5.8	5.2	5.5	5.5
Recommendations of high school teachers and principal	5.8	5.6	3.5	2.0	5.2
High School grades	5.6	5.4	3.2	2.8	5.1
Rank in high school graduating class	4.8	4.5	3.0	2.5	4.3
Test scores (ACT, I.Q., etc)	4.6	4.5	3.3	2.5	4.3

[a] Values shown are means from a nine-point scale, with nine having major value.

Table 38

EXPERIENCES OF TECHNICAL AGRICULTURE STUDENTS SINCE GRADUATING AS TECHNICIANS AND AVERAGE NUMBER OF MONTHS IN EACH POSITION

	Agri-Business		Agri-Equipment		Food Processing		Horti-culture		All Programs	
Experience	N	Months	N	Months	N	Months	N	Months	N	Months
Employed as agricultural technician	6	10.8	2	11.5	4	12	3	11.0	15	11.0
Other Employment	3	10.0	2	10.0	0	0	1	12.0	6	10.3
Military Service	1	10.0	1	6.0	0	0	0	0.0	2	8.0
Further Education	0	0.0	1	3.0	0	0	1	10.0	2	6.5
Unemployment	1	1.0	0	0.0	0	0	0	0.0	1	1.0

Table 39

PRESENT STATUS OF GRADUATES FROM
TECHNICAL AGRICULTURE PROGRAMS

Present Status	Agri-Business N=7	Agri-Equipment N=6	Food Processing N=4	Horti-culture N=3	All Programs N=20
Agricultural technician	4	2	4	2	12
Farming	1	3	0	0	4
Non-agricultural occupation	2	0	0	1	3
Military Service	0	1	0	0	1

Table 40

PRIOR EMPLOYMENT WITH PRESENT EMPLOYER
AS REPORTED BY TECHNICAL AGRICULTURE GRADUATES

Program	Number employed	Number with same employer prior to graduation	Per Cent
Agri-Business	8	2	25.0
Agri-Equipment	5	2	40.0
Food Processing	4	1	25.0
Horticulture	7	7	100.0
All Programs	24	12	50.0

Table 41

NUMBER OF POSITIONS, DIFFERENT EMPLOYERS, HELD BY GRADUATES FROM TECHNICAL AGRICULTURE PROGRAMS

Number of Positions Held	Agri-Business N=8	Agri-Equipment N=5	Food Processing N=4	Horti-culture N=7	All Programs N=24
1	5	5	3	6	19
2	3	0	1	1	5

Table 42

TECHNICAL AGRICULTURE GRADUATE SATISFACTION WITH PRESENT JOB

Level of Satisfaction	Agri-Business N=8	Agri-Equipment N=5	Food Processing N=4	All Programs N=17
Very satisfied	4	2	2	8
Satisfied	2	2	1	5
Dissatisfied	2	0	1	3
Very Dissatisfied	0	1	0	1

Table 43

NUMBER OF GRADUATES WHO REPORTED THAT THEY WOULD AGAIN ENROLL IN THE TECHNICAL AGRICULTURE PROGRAM FROM WHICH THEY GRADUATED

Responses	Agri-Business N=8	Agri-Equipment N=5	Food Processing N=4	Horti-culture N=7	All Programs N=24
Yes	7	3	4	6	20
No	1	2	0	1	4

Table 44

STARTING AND PRESENT SALARIES, EARNINGS PROGRESSION[a]
OF GRADUATES FROM TECHNICAL AGRICULTURE PROGRAMS

Salaries Earning Progression	Agri-Business	Agri-Equipment	Food Processing	Horti-culture	All Programs
Starting Salary (Reported by Graduate)	N=6 $427.00	N=1 $340.00	N=4 $566.25	N=-- ----	N=11 $469.73
Present Salary (Reported by Graduate)	N=5 $505.60	N=3 $422.69	N=4 $585.00	N=-- ----	N=12 $511.33
Starting Salary (Reported by Employers)	N=5 $423.20	N=1 $440.00	N=5 $539.40	N=9 $443.22	N=20 $462.10
Present Salary (Reported by Employers)	N=3 $510.33	N=0 -----	N=5 $575.80	N=9 $617.56	N=17 $586.35
Earnings Progression (based on graduate report)	N=5 $ 9.32	N=--- $----	N=4 $ 1.56	N=--- ----	N=9 $5.52

[a] Earnings Progression equals present salary minus starting salary divided by number of months worked.

Table 45

VALUE OF SELECTED ASPECTS OF TECHNICAL AGRICULTURE PROGRAMS AS RATED BY GRADUATES[a]

Selected Aspects	Agri-Business N=8	Agri-Equipment N=5	Food Processing N=4	Horti-culture N=7	All Programs N=24
Classwork in agriculture	5.9	6.6	5.5	4.6	5.6
Classwork other than agriculture	4.6	6.8	7.0	4.9	5.5
Counseling by faculty	5.3	6.4	4.5	4.6	5.2
Contact with students with similar interests	5.0	5.6	4.0	4.3	4.8
On-the-job training	3.5	2.8	5.8	4.7	4.1
School clubs and social activities	3.5	3.2	3.5	3.0	3.3

[a] Values are means from a nine-point scale, nine indicating major value.

Table 46

VALUE OF PREVIOUS EXPERIENCES TO TECHNICAL AGRICULTURE PROGRAM GRADUATES

Previous Experience	Total Number of times Ranked	Number of Times Ranked			Rank Mean[a]
		1st	2nd	3rd	
Technical school education	20	11	4	5	1.70
High School education	14	5	7	2	1.79
Farm experience	11	3	3	5	2.18
Other agricultural employment	4	1	2	1	2.00
Company educational programs	3	0	2	1	2.33
Youth leadership activities	7	0	3	4	2.57
Other employment	4	0	0	4	3.00

[a] Rank mean was calculated by multiplying first place ranks by one, second place ranks by two, third place ranks by three, totaling and dividing by the number of times the experience was ranked.

Table 47

GRADUATE REACTION TO SUPERVISED OCCUPATIONAL EXPERIENCE AS AN ASPECT OF TECHNICAL AGRICULTURE PROGRAMS

Responses	Agri-Business N=8	Agri-Equipment N=5	Food Processing N=4	Horti-culture N=7	All Programs N=24
Definitely yes	6	1	1	5	13
Yes	1	4	1	2	8
Undecided	1	0	2	0	3
No	0	0	0	0	0

Table 48

INFLUENCE ON TECHNICAL AGRICULTURE GRADUATES IN SELECTION OF A POSITION[a]

Factor or Person	Agri-Business N=8	Agri-Equipment N=5	Food Processing N=4	Horti-culture N=7	All Programs N=24
Opportunity for advancement	6.4	6.4	8.2	5.9	6.5
Personality and attitude of person doing the hiring	5.9	6.4	6.8	5.6	6.0
Opportunity for additional training with employing company	5.4	7.0	6.2	5.9	6.0
Desirable working conditions	5.1	6.0	6.8	5.3	5.6
Rate of Pay	5.0	3.4	6.8	4.3	4.8
Technical school teachers	4.1	3.2	4.8	5.4	4.4
Has employed here while attending technical school and liked it	2.8	4.8	2.8	6.3	4.2
Opportunity to live at home or near home	3.2	6.2	1.2	4.7	4.0
Influence of parents, wife, relatives, or friends	3.5	2.6	2.8	5.3	3.7

[a] Values are a mean from a nine-point scale, nine indicating major influence.

Table 49

JOB TITLES OF GRADUATES FROM THE TECHNICAL AGRICULTURE PROGRAMS

Job Titles (1st Position/2nd/3rd)	Agri-Business N=5	Agri-Equipment N=2	Food Processing N=5	Horti-culture N=9	All Programs N=21
Salesman	1	0	0	0	1
Manager, Assistant Manager	3/1	0	0	0	3/1
Foreman	0	0	0	6	6
Laborer	1	1	0	0	2
Serviceman	0	1	0	0	1
Food Technologist	0	0	3	0	3
Other	1	0	2	3/3/1	5/4/1

Table 50

ANTICIPATED INCOME OF GRADUATES FIVE YEARS
AFTER COMPLETION OF THE TECHNICAL AGRICULTURE PROGRAMS
AS REPORTED BY EMPLOYERS

Anticipated Annual Income	Agri-Business N=5	Agri-Equipment N=0	Food Processing N=5	Horti-culture N=8	All Programs N=18
$6,000-$6,999	0	---	0	1	1
$7,000-$7,999	0	---	2	0	2
$8,000-$8,999	0	---	2	1	3
$9,000-$9,999	1	---	0	4	5
$10,000-$10,999	3	---	0	2	5
$11,000-$11,999	1	---	1	0	2

Table 51

LEVEL OF TECHNICAL AGRICULTURE GRADUATE JOB SKILLS
AS RATED BY THEIR EMPLOYER

Job Skills	Agri-Business N=5	Food Processing N=5	Horti-culture N=9	All Programs N=19
Orderliness	7.4	6.2	6.4	6.6
Speaking Ability	6.8	6.4	5.9	6.3
Use of English	6.8	6.2	5.7	6.1
Mathematical Ability	6.6	5.8	5.9	6.1
Mechanical Aptitude	6.8	5.6	5.3	5.8
Written Communication	5.0	5.8	5.2	5.3
Knowledge of Merchandise	6.6	4.0	5.3	5.3
Salesmanship	6.6	4.0	5.2	5.3

Table 52

RATING OF GRADUATES FROM TECHNICAL AGRICULTURE PROGRAMS BY THEIR EMPLOYERS

Rating	Agri-Business N=5	Food Processing N=5	Horti-culture N=9	All Programs N=19
Superior	2	1	0	3
Above Average	3	1	6	10
Average	0	3	2	5
Below Average	0	0	1	1
Very Poor	0	0	0	0
Mean Rating[a]	4.4	3.6	3.6	3.8

[a] Based on five-point scale; 5=Superior, 4=Above Average, ..., 1=Very Poor.

Table 53

WILLINGNESS OF EMPLOYERS TO HIRE
OTHER GRADUATES FROM TECHNICAL AGRICULTURE PROGRAMS

Responses	Agri-Business N=5	Agri-Equipment N=2	Food Processing N=5	Horti-culture N=9	All Programs N=21	Per cent
Yes	3	0	5	6	14	66.7
Yes, with Reservations	2	2	0	3	7	33.3
No	0	0	0	0	0	00.0

Table 54

GENERAL TRAITS OF STUDENTS AND GRADUATES
OF TECHNICAL AGRICULTURE PROGRAMS[a]

General Traits	As Rated By Employers N=19	Graduates N=24	Students N=54
INTEGRITY: Trustworthiness, honesty, loyalty	7.5	7.2	7.2
DEPENDABILITY: Promptness, reliability in attendance	7.0	7.4	7.1
RESPONSIBILITY: Willingness with which work is accepted and performed	7.2	7.6	7.4
INITIATIVE: Ability to plan and direct one's own work	6.2	7.3	7.1
JUDGMENT: Ability to make sound, accurate decisions	6.5	6.6	6.6
COOPERATION: Ability to work with others	7.2	7.2	7.3
LEADERSHIP: Qualities of understanding people and directing work of others	6.0	6.7	6.8
ATTITUDES TOWARD WORK: Degree of enthusiasm with which one performs his work	6.8	6.9	6.9
EMOTIONAL STABILITY: Poise and self-control	6.9	6.4	6.7
COURTESY AND FRIENDLINESS: Consideration and kindness toward others	7.4	7.1	7.1
PERSONAL APPEARANCE: Neatness, cleanliness, appropriate dress and grooming	7.3	7.3	6.7
POTENTIALITIES: Ability to meet and to apply one's self to new situations	6.9	6.8	6.9

[a]Values are a mean from a nine-point scale, nine indicating highest rating.

Table 55

IMPORTANCE OF GENERAL ABILITIES IN TECHNICAL AGRICULTURE PROGRAMS

General Abilities	As Ranked By Employers N=19	As Ranked By Graduates N=24
Supervise employees	2.4	2.4
Communicate on the telephone	2.3	2.8
Use good human relations techniques in speaking and writing	2.3	2.6
Listen and comprehend what is heard	2.3	2.8
Do basic arithmetical problems	2.2	2.8
Read with understanding	2.2	2.8
Use proper grammar	2.1	2.5
Spell	2.0	2.6
Write reports, news releases, sales messages, etc.	1.6	2.2
Speak at staff meetings, sales clinics, etc.	1.6	2.4
Use parliamentary procedures	1.5	1.8
Prepare, interpret, and analyze financial statements	1.5	2.1
Dictate letters	1.3	1.6
Analyze and make recommendations on supplying credit to customers	1.2	2.2
Do complete accounting	1.2	2.0

[a] Values are a mean value from a three-point scale, three indicating highest rating.

Table 56

PREPARATION OF STUDENTS AND GRADUATES OF TECHNICAL AGRICULTURE PROGRAMS IN GENERAL ABILITIES[a]

General Abilities	As Rated By Employers N=19	Graduates N=24	Students N=24
Listen and comprehend what you hear	5.8	6.2	6.2
Communicate on the telephone	5.8	6.2	6.2
Do basic arithmetical problems	5.6	6.6	6.8
Use proper grammar	5.5	6.0	6.1
Read with understanding	5.3	6.2	6.0
Use good human relations techniques in speaking and writing	5.1	6.2	6.2
Supervise employees	4.7	5.5	6.5
Spell	4.6	5.2	5.2
Write reports, news releases, sales messages, etc.	3.4	4.7	5.0
Use parliamentary procedures	3.2	5.2	6.2
Speak at staff meetings, sales clinics, etc.	3.1	5.2	5.0
Prepare, interpret, and analyze financial statements	3.1	4.6	4.4
Dictate letters	2.6	3.0	4.8
Analyze and make recommendation on supplying credit to customers	2.0	5.5	5.3
Do complete accounting	1.8	4.7	4.2

[a]Values are a mean from a nine-point scale, nine indicating highest rating.

Table 57

IMPORTANCE OF GENERAL UNDERSTANDINGS
IN TECHNICAL AGRICULTURE PROGRAMS[a]

General Understandings	As RAnked By Employers N=19	Graduates N=24
Problems common to agricultural business	2.1	2.4
Consumer demands	1.9	2.2
Principles of merchandising	1.8	2.2
Government's role in agriculture	1.8	2.2
Supply, demand, and pricing of agricultural products	1.7	2.1
Money and banking and their importance in our society	1.7	2.4
Types of economic systems, capitalism, socialism, etc.	1.7	1.8
Economic trends which control the buying and selling of merchandise	1.7	2.0
Price cycles as they apply to agriculture	1.6	2.0
Principles of credit	1.6	2.6
Money management in an agricultural business	1.6	2.4
Basic accounting principles	1.5	2.2
Principles and functions of advertising	1.5	2.3
Types of agricultural business, independent, corporation, etc.	1.5	1.9
Merchandise display	1.5	2.0

[a]Values are a mean from a three-point scale, three being the highest rating.

Table 58

PREPARATION OF
TECHNICAL AGRICULTURE STUDENTS AND GRADUATES IN
GENERAL UNDERSTANDINGS

General Understandings	As Rated By Employers N=19	Graduates N=24	Students N=24
Consumer demands	4.7	5.3	6.3
Problems common to agricultural business	4.6	5.7	6.6
Types of economic systems, capitalism, socialism, etc.	4.2	4.5	5.0
Government's role in agriculture	4.1	5.3	5.5
Money and banking and their importance in our society	4.1	5.6	5.9
Principles of merchandising	4.1	5.5	5.2
Principles and functions of advertising	3.9	6.0	5.3
Economic trends which control the buying and selling of merchandise	3.9	5.4	5.2
Supply, demand and pricing of agricultural products	3.7	5.5	6.2
Price cycles as they apply to agriculture	3.7	4.6	6.1
Merchandise display	3.7	5.1	5.1
Principles of credit	3.7	5.2	6.2
Types of agricultural business, independent, corporation, etc.	3.6	5.1	6.6
Money management in an agricultural business	3.5	5.3	5.8
Basic accounting principles	3.4	5.7	5.0

[a]Values are a mean from a nine-point scale, nine indicating highest rating

Table 59

PREPARATION OF STUDENTS AND GRADUATES IN TECHNICAL ABILITIES
AGRI-BUSINESS PROGRAM[a]

Technical Abilities	As Rated By Employers N=5	Graduates N=8	Students N=24
Grade grain	7.4	6.8	6.7
Retail animal health products	5.0	5.4	5.6
Calculate proportions necessary for feed and fertilizer mixing operations	5.0	6.5	6.0
Operate common office machines	5.0	6.2	6.6
Advise farmers about herbicides	4.8	5.9	5.5
Formulate rations	4.6	6.5	5.5
Sell farm supplies and services	4.6	6.0	6.1
Advise farmers about insecticides	4.4	5.8	5.3
Develop a lime and fertilizer program using soil test results	4.4	5.9	5.7
Compute the cost of rations	4.4	6.5	5.8
Hedge farm commodities	4.4	6.2	5.9
Identify common weeds and weed seeds	4.2	5.8	5.7
Advise farmers about crop varieties	4.0	5.9	5.5
Recommend tillage practices	4.0	6.1	5.8
Calculate price mark-ups, discounts, etc.	4.0	6.1	5.9
Analyze market trends	3.6	5.6	5.5

Table 59 Continued

Technical Abilities	As Rated By Employers N=5	Graduates N=8	Students N=24
Plan and organize an agricultural business	3.6	5.2	5.2
Train, motivate, and evaluate employees	3.2	4.9	5.7
Direct and control the operations of an agricultural business	3.0	5.2	5.3
Select, interview, and test prospective employees	2.4	4.9	5.5

[a] Values are means from a nine-point scale, nine indicating highest value.

Table 60

PREPARATION OF STUDENTS AND GRADUATES IN TECHNICAL UNDERSTANDINGS AGRI-BUSINESS PROGRAM[a]

Technical Understandings	As Rated By Employers N=5	Graduates N=8	Students N=24
Handling, treating, and conditioning grain for storage	5.4	6.6	5.9
Marketing functions and procedures	5.2	4.5	6.1
Use of feed additives	5.0	5.2	5.6
Feed nutrients and livestock nutrient requirements	5.0	5.6	5.6
Fertilizer uses, manufacture, and formulation	4.8	6.2	5.9
Common livestock diseases and treatment	4.8	5.8	6.2
Plant growth and development	4.6	5.6	5.8
Purposes of common bacterins, vaccines, medications, etc.	4.6	5.1	5.7
Working relations between labor and management	4.6	5.4	5.7
Soil origin, composition, and characteristics	4.4	5.1	5.2
Principles of price forecasting	4.2	5.4	5.5
Warehousing laws	4.2	4.9	4.6
Fringe benefits and retirement procedures	3.6	4.5	4.8
Feed laws and law regulating feed sales	3.4	4.5	4.1

Table 60 Continued

Technical Understandings	As rated by Employers N=5	Graduates N=8	Students N=24
Workable wage structures	3.4	4.8	5.1
Labor laws and regulations	3.4	4.5	4.5

[a] Values are means from a nine-point scale, nine being the highest value.

Table 61

PREPARATION OF STUDENTS AND GRADUATES IN TECHNICAL ABILITIES AGRI-EQUIPMENT PROGRAM[a]

Technical Abilities	As Rated By Graduates N=5	As Rated By Students N=18
Recognize safe use of electricity	7.2	6.5
"Trouble Shoot" a tractor engine	7.0	6.2
Adjust farm machinery for proper operation	6.7	6.7
Recommend field machinery to a farmer for a specific farm situation	6.6	6.7
Sketch and communicate ideas in drawings	6.4	5.6
Recommend proper type of electric motor for a specific use	6.2	5.7
Recommend proper size of electric motor for a specific use	6.2	5.7
Read blueprints and specifications	6.2	5.1
Recognize normal wear on tractors	6.0	6.7
Calculate price mark-ups, discounts, etc.	5.6	6.1
Interview, select, and test prospective employees	4.8	6.0
Sell farm supplies and services	4.6	6.6
Train, motivate, and evaluate employees	4.4	5.8
Plan and organize an agricultural business	3.8	5.9
Direct and control the operations of an agricultural business	3.0	5.9

[a]Values are means from a nine-point scale, nine being the highest value.

Table 62

PREPARATION OF STUDENTS AND GRADUATES IN TECHNICAL UNDERSTANDINGS
AGRI-EQUIPMENT PROGRAM

Technical Understandings	As rated by Graduates N=5	As rated by Students N=19
Types and kinds of farm machinery available	7.6	7.0
Nomenclature of a tractor's power train	7.4	6.8
Principles of operation of the internal combustion engines	7.2	7.2
Basic electrical principles	7.2	6.2
Traction principles and problems	7.2	6.7
Basic farm crop habits that affect farm machinery use and operation	7.2	6.6
Principles of operation of a tractor's power train	7.0	6.7
Nomenclature of internal combustion engines	7.0	6.8
Soil origin, composition, and characteristics	6.8	5.9
Proper hitching	6.8	6.8
Problems in crop harvesting	6.6	6.6
Principles of crop harvesting	6.4	6.4
Environmental control for animals	6.2	5.2
Hydraulic operations	6.0	6.1
Mathematical principles as they apply to mechanics	6.0	6.1
Working relations between labor and management	5.8	6.3
Properties of building materials	5.8	5.3
Plant growth and reproduction	5.6	5.9

Table 62 Continued

Technical Understandings	As Rated By Graduates N=5	As Rated By Students N=19
Environmental control for grain storage and other commodities	5.6	5.1
Principles of fertilizer placement	5.6	6.1
Conventional building practices	5.4	5.4
Basic views and conventions used in drafting	5.4	5.1
Rates of seeding and seeding depth	5.4	5.7
Principles of herbicide application	5.4	5.5
Workable wage structure	5.2	5.8
Principles of insecticide application	5.0	5.4
Fringe benefits and retirement	4.8	6.1
Job opportunities that exist in the equipment industry	4.6	6.5

Table 63

PREPARATION OF STUDENTS AND GRADUATES IN TECHNICAL ABILITIES
FOOD PROCESSING PROGRAM

Technical Abilities	As Rated By Employers N=5	Graduates N=4	Students N=6
Recognize unsanitary plant conditions	6.8	8.0	8.7
Correct unsanitary plant conditions	6.8	7.2	8.0
Determine adultration in food products	6.4	6.5	7.8
Inspect filled containers for proper weight	6.4	8.0	8.7
Interpret food standards	6.0	6.0	7.8
Record quality control data	6.0	7.5	8.2
Measure product quality using physical instrumentation methods	5.8	6.2	7.8
Measure the quality of specific foods	5.8	7.0	6.5
Determine the quality of food products	5.8	7.8	8.0
Inspect food containers for defects	5.8	6.8	7.8
Inspect food labels for defects	5.8	6.8	7.8
Evaluate data from recording instruments	5.6	6.5	6.3
Set up statistical quality control charts for variables in product quality	5.6	4.5	7.2
Determine constituents in food products	5.6	5.5	7.0
Use instruments for measuring the chemical constituents of food products	5.6	4.8	6.5

Table 63 Continued

Technical Abilities	As Rated By Employers N=5	Graduates N=4	Students N=6
Develop procedures of specifications and measurements in quality control	5.6	6.0	6.2
Develop quality control charts	5.6	6.5	7.8
Operate a steam or kettle blancher	4.6	5.5	6.7
Conduct microscopic and viable plate counts	4.6	5.2	8.0
Operate a comminuter	4.4	5.8	6.7
Determine the effectiveness of various detergents and chlorination procedures	4.2	5.8	7.0
Identify types of microorganisms in a sample	4.0	5.0	5.8
Evaluate a problem using dimensional analysis	3.8	1.5	5.5
Use recorder instruments	3.6	6.0	7.0
Calculate thermo process time and temperature	3.4	4.8	6.5
Calculate volume of simple shapes	3.4	4.2	7.3
Adjust the sorting belt speed	3.2	5.2	5.8
Calculate per cent error	3.2	6.8	8.5
Make adjustments in operations or processes with the aid of automatic controls	2.8	6.5	7.0
Install and make adjustments of testing instruments	2.8	5.0	6.3

Table 63 Continued

Technical Abilities	As Rated By Employers N=5	Graduates N=4	Students N=6
Operate color instruments	2.8	5.8	7.7
Prepare solutions in proper proportions by weight	2.8	5.8	7.5
Use a slide rule for all food processing calculations	2.8	6.2	7.0
Isolate in pure culture different microorganisms	2.6	5.8	6.6
Measure enzyme activity	2.6	4.2	6.0
Calculate freezing and drying rates of specific foods	2.6	3.0	5.8
Determine specific nutrients of food products	2.6	3.2	5.3
Set up and conduct flavor panels	2.6	5.8	8.0
Read, analyze, and report on technical articles	2.6	5.8	6.5
Identify chemical compounds	2.6	4.5	6.7
Perform moisture-vapor exchange rate studies	2.6	7.8	6.8
Operate a hydrout coring device	1.6	4.0	5.0
Operate an abrasive peeler	1.6	6.0	5.3
Convert kilowatts to horsepower	1.6	5.0	6.5
Calculate calories and BTU	1.6	5.2	7.5
Determine amperes drawn by electrical equipment	1.6	4.8	5.5

Table 63 Continued

Technical Abilities	As Rated By Employers N=5	Graduates N=4	Students N=6
Balance organic and inorganic chemical equations	1.6	4.5	6.5
Contact and use the services of a food broker	1.6	3.2	4.3
Operate a labeling machine	1.6	5.2	5.7
Operate a closing machine	1.6	5.0	7.7
Operate a reel, spray or soak washer	1.6	4.8	5.5

Table 64

PREPARATION OF STUDENTS AND GRADUATES IN TECHNICAL UNDERSTANDINGS
FOOD PROCESSING PROGRAM

Technical Understandings	As Rated By Employers N=5	Graduates N=4	Students N=6
Importance of plant inspectors	7.2	7.8	8.0
Principles of canning foods	7.0	5.8	8.0
Sanitation methods	6.8	7.0	8.0
Organization of quality control departments	6.4	4.8	7.3
Need for quality control in food processing	6.2	8.2	8.8
Organization and responsibility of a sanitation program	6.2	7.0	7.8
Control and elimination of rodent and insect pests in the food plant	6.2	7.0	7.7
Principles of sanitary plant and equipment construction	6.2	5.2	8.0
Production practices related to food quality	6.2	7.5	7.8
Machinery used in food processing	6.0	6.8	8.0
Instruments used in quality control	6.0	7.8	8.0
Equipment used in canning	6.0	6.2	8.2
Use of food, color, and preservative additives	6.0	6.2	6.8
Quality characteristics of specific foods	6.0	7.5	7.3
Reasons for a good processing industry	5.8	7.5	7.7

Table 64 Continued

Technical Understandings	As Rated By Employers N=5	Graduates N=4	Students N=6
Principles of grading and inspection of food products	5.8	7.0	7.8
Level and flow meters	5.8	6.2	7.5
Control and elimination of micro-organisms in the food plant	5.8	7.0	8.2
Scientific method	5.8	6.8	6.7
Food processing terminology	5.6	7.2	7.0
Metal packaging of processed food	5.6	6.5	5.7
Glass packaging of processed food	5.6	6.8	6.0
Product flow into a food processing plant	5.6	8.0	7.2
Temperature indicating devices	5.6	7.0	7.7
Heat and heat transfer	5.6	6.2	7.2
How microorganisms propagate	5.6	6.0	7.5
Concepts of the food processing industry	5.4	7.0	7.0
Areas of production of various food products	5.4	5.5	6.5
Chain of command in business	5.4	6.0	5.0
Need for and use of a factory flow chart	5.4	7.0	8.2
Types of agricultural food products	5.2	6.0	6.8
Food product laws, regulations, etc.	5.0	7.0	7.8

Table 64 Continued

Technical Understandings	As Rated By Employers N=5	Graduates N=4	Students N=6
Food standards	5.0	7.2	8.0
Corrugated and fiber packaging of processed food	5.0	6.5	6.3
Major uses of agricultural commodities in processing	4.8	5.8	6.7
Characteristics of major fruits and vegetables	4.8	6.5	6.3
Principles of the hydrometer, manometer, Bourdon tube, etc.	4.4	6.5	7.5
Food processing plant design and layout	4.4	6.2	7.0
Energy and pressure as it applies to instrumentation	4.0	6.0	6.7
Simple machines as used in complex machinery	4.0	5.2	6.8
Relationship between force, motion, energy and power	2.6	5.5	7.2
Use of electricity and light in instrumentation	2.6	4.5	5.8
Principles of freezing foods	2.6	5.5	7.3
Principles of dehydrating foods	2.6	6.0	7.3
Equipment used in freezing	2.6	5.2	7.2
Equipment used in dehydration	2.6	4.2	7.3
Flexible packaging of processed food	2.4	5.8	6.5
Marketing raw food products to the processor	1.6	5.2	5.7

Table 64 Continued

Technical Understandings	As rated By Employers N=5	Graduates N=4	Students N=6
Methods and routes used in food transportation	1.6	5.0	5.0
Methods used to market food products by the processor	1.6	4.8	5.7
Function of market research	1.6	4.5	5.3
Use of advertising media in marketing food products	1.6	4.8	5.5

Table 65

PREPARATION OF STUDENTS AND GRADUATES IN TECHNICAL ABILITIES
HORTICULTURE PROGRAM

Technical Abilities	As Rated By Employers N=9	Graduates N=7	Students N=3
Safely use recommended pesticides	6.6	6.6	7.3
Use inorganic and organic fertilizers	6.2	6.7	7.0
Identify common horticultural plant materials	6.2	6.9	7.3
Determine types of fertilizer to use in various situations	6.1	6.4	7.7
Conduct a training program for maintenance personnel	6.1	5.7	5.7
Identify mechanical damage	5.8	6.0	6.7
Conserve soil moisture	5.8	6.3	7.0
Identify insect damage	5.7	5.0	7.7
Identify plant diseases	5.6	5.9	7.7
Develop and prepare soil mixtures	5.4	6.0	7.7
Plan a spraying program	5.4	5.9	7.7
Recognize plant nutrient deficiencies	5.3	5.6	6.0
Teach a work crew new methods	5.3	6.0	7.7
Operate common horticultural equipment, sprayers, movers, etc.	5.2	7.3	7.7
Calibrate sprayers for correct rate of application	5.1	5.9	6.7
Remove surplus water	5.1	5.3	7.0
Select and use plant materials in landscaping	5.1	6.3	9.0

Table 65 Continued

Technical Abilities	As Rated By Employers N=9	Graduates N=7	Students N=3
Apply lime and fertilizer to properly correct soil deficiencies	5.0	4.4	7.3
Plan work schedules	5.0	6.6	7.7
Maintain and adjust common horticultural equipment	5.0	7.0	5.3
Manage turf crops	5.0	6.4	7.3
Read and interpret landscape drawings	4.9	6.6	9.0
Recognize common engine failures	4.8	5.4	5.3
Plan a drainage system	4.8	5.6	7.7
Draw landscape plans	4.8	6.6	9.0
Tune-up small gasoline engines	4.7	5.4	5.3
Control factors affecting basic plant processes	4.4	5.0	5.0
Test soil for nutrient deficiencies	4.3	5.7	7.7
Develop a plan of soil management for outdoor sites	4.2	5.3	---
Sharpen and adjust a reel mower	4.2	5.9	6.7
Keep growth records	4.2	5.0	7.0
Determine labor needs and costs for specific jobs	3.9	5.6	6.3
Establish a maintenance and cost-accounting system for equipment	3.8	5.3	5.7
Keep weather records	3.7	5.0	7.0
Analyze plant processes under controlled conditions	3.7	4.1	5.7

Table 65 Continued

Technical Abilities	As Rated By Employers N=9	Graduates N=7	Students N=3
Plan an irrigation system	1.7	5.1	7.7
Develop a plan of soil management for greenhouse crops	1.1	4.3	7.7

Table 66

PREPARATION OF STUDENTS AND GRADUATES IN TECHNICAL UNDERSTANDINGS
HORTICULTURE PROGRAM

Technical Understandings	As Rated By Employers N=9	Graduates N=7	Students N=4
Structure and activity of atoms	8.9	4.7	4.2
Soil improvement materials	6.4	6.7	6.5
Methods of job and employee evaluation	6.3	6.6	6.2
Fertilizers and soil fertility	6.2	6.9	7.2
Elements needed by plants and their common sources	6.2	6.3	7.5
Technician's qualifications in the horticultural industry	6.2	5.4	5.8
Job opportunities as a horticultural technician	6.2	4.7	5.5
Importance of organic matter in the soils	6.0	6.4	7.0
Soil--water--plant relationships	6.0	6.6	7.0
Pesticides, their safe use and compatibilities	6.0	5.6	6.8
Physical properties of soil	5.9	6.3	6.2
Technician's role in the horticultural industry	5.8	5.9	6.0
Principles of engine operation	5.7	5.9	6.2
Understanding of photosynthesis and respiration	5.7	6.3	7.2
Basic processes of plant growth	5.6	6.6	7.0
Soil reactions	5.4	6.0	7.0

Table 66 Continued

Technical Understandings	As Rated By Employers N=9	Graduates N=7	Students N=4
Relationship between cultural practices, environmental conditions and insect and disease problems	5.4	5.4	6.5
Relationship of organic and inorganic chemistry to horticulture	5.3	5.6	5.0
Maintenance and tune-up of engines and equipment	5.2	5.7	5.0
Landscape design principles	4.8	6.1	9.0
Nitrogen cycle	4.7	6.3	7.2
Principles and procedures of plant propagation	4.4	5.9	5.8
Forms of plant life	4.4	5.7	6.2
Soil microorganism	4.2	5.4	5.5
Landscape architecture	4.0	5.6	8.5